Series 1960, No. 1

Issued May 1963

SOIL SURVEY

Lincoln County Mississippi

OUR SOIL ★ OUR STRENGTH

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
In cooperation with
MISSISSIPPI AGRICULTURAL EXPERIMENT STATION

HOW TO USE THE SOIL SURVEY REPORT

THIS SOIL SURVEY of Lincoln County will serve various groups of readers. It will help farmers in planning the kind of management that will protect their soils and provide good yields, and it will add to the fund of knowledge about soils.

Soil scientists studied and described the soils and made a map that shows the kind of soil everywhere in the survey area. The base for the soil map is a set of aerial photographs that show fields, woods, roads, and many other landmarks.

Locating the soils

Use the *index to map sheets* to locate areas on the large map. The index is a small map of the county that shows the location of each sheet on the large map. When the correct sheet of the large map is found, it will be seen that boundaries of the soils are outlined in red, and that there is a symbol for each soil. Suppose, for example, an area on the map has the symbol BuB2. The legend for the detailed map shows that this symbol identifies Bude silt loam, 2 to 5 percent slopes, eroded. This soil and all others mapped in the county are described in the section "Descriptions of Soils."

Finding information

The report has special sections for different groups of readers. The section "Additional Facts About the County," which discusses the drainage and water supplies, climate, and other general facts, will be of interest mainly to those not familiar with the county. The "Guide to Mapping Units" at the back of the report will help the reader to use the map and the report. Soil terms that may be unfamiliar to some readers are defined in the Glossary.

Farmers and those who work with farmers can learn about the soils in the section "Descriptions of Soils," and then go to the section "Use and Management of the Soils." In this way they first identify the soils on their farms and then learn how these soils can be managed and what yields can be expected. The soils are grouped by capability units; that is, groups of soils that need similar management and respond in about the same way. For example, Bude silt loam, 2 to 5 percent slopes, eroded, is in capability unit A7–IIIw–3. The management needed for cultivated crops grown on this soil will be found under the heading Capability Unit A7–IIIw–3, in the section "Management by Capability Units." The woodland uses of this soil are described under woodland group 2 in the section "Uses of Soils for Growing Wood Crops." A list just before the map sheets gives the name of each soil, the page where it is described, the symbol of the capability unit in which it has been placed, and the page where the capability unit is described.

Foresters and others interested in woodland can refer to the section "Uses of Soils for Growing Wood Crops." In that section the kinds of trees in the county are described and the factors affecting the management of woodlands are discussed.

Engineers will want to refer to the section "Engineering Applications." Tables in that section show characteristics of the soils that affect engineering.

Persons interested in science will find information about how the soils were formed and how they are classified in the section "Formation, Classification, and Morphology of Soils."

Students, teachers, and other users will find information about soils and their management in various parts of the report, depending on their particular interest.

Newcomers in Lincoln County will be especially interested in the section "General Soil Map," which describes the broad patterns of the soils. They may also wish to read the section "Additional Facts About the County," which gives general information.

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Contents

Series 1960, No. 1 **Issued May 1963**

SOIL SURVEY OF LINCOLN COUNTY, MISSISSIPPI

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UNITED STATES DEPARTMENT OF AGRICULTURE IN COOPERATION WITH THE MISSISSIPPI AGRICULTURAL EXPERIMENT STATION

LINCOLN COUNTY is in the southwestern part of Mississippi (fig. 1). It is bordered on the north by Copiah County, on the east by Lawrence County, on the south by Amite and Pike Counties, and on the west by Franklin and Jefferson Counties. The county has a land area of 375,040 acres, or 586 square miles.

Agriculture is the main occupation in the county. Cotton was once the most important crop, but, during the past few years, farmers have grown more grain and have stressed sod crops, other close-growing crops, and tree farming. Dairying, the raising of beef cattle, and tree farming are now the major agricultural enterprises.

To help in planning good use and conservation of the soils on their farms, the farmers and landowners in the county organized the Lincoln County Soil Conservation District. This district, through its board of commissioners, arranges for farmers to receive technical help from the Soil Conservation Service. The soil survey furnished some of the facts needed for this technical help. The soil survey map and report are useful to agricultural workers, farmers, land appraisers, credit agencies, road engineers, and others who are concerned with the use and management of land.

Fieldwork on this soil survey was completed in June 1960. Unless otherwise specified, all of the statements in the report refer to conditions at that time.

How Soils Are Named, Mapped, and Classified

Soil scientists made this survey to learn what kinds of soils are in Lincoln County, where they are located, and how they can be used.

They went into the county knowing they likely would find many soils they had already seen, and perhaps some they had not. As they traveled over the county, they observed steepness, length, and shape of slopes; size and speed of streams; kinds of native plants or crops; kinds of rock; and many facts about the soils. They dug or bored many holes to expose soil profiles. A profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down to the rock material that has not been changed much by leaching or by roots of plants.

The soil scientists made comparisons among the profiles they studied, and they compared these profiles with those in counties nearby and in places more distant. They classified and named the soils according to uniform procedures. To use this report efficiently, it is necessary to know the kinds of groupings most used in a local soil classification.

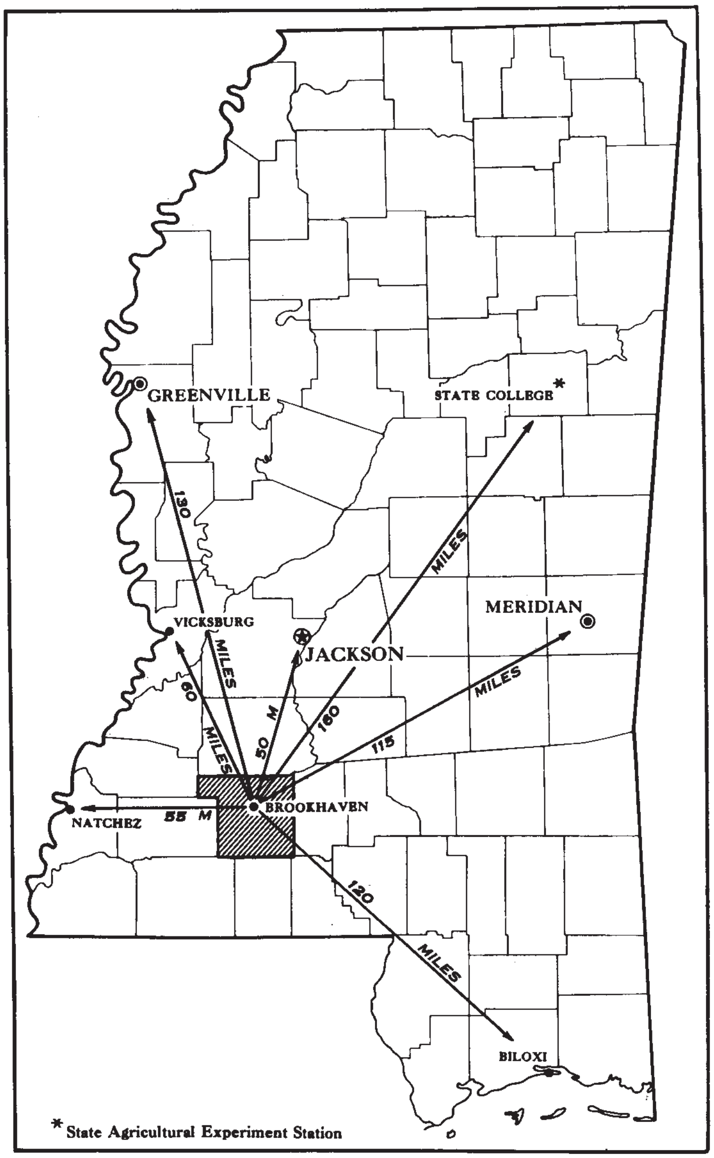

Figure 1.—Location of Lincoln County in Mississippi.

[1] Joseph V. Zary helped to prepare the section "Uses of Soils for Growing Wood Crops," and Joel G. Payne helped prepare the section "Engineering Applications."

Soils that have profiles almost alike make up a soil series. Except for different texture in the surface layer, all the soils of one series have major horizons that are similar in thickness, arrangement, and other important characteristics. Each soil series is named for a town or other geographic feature near the place where a soil of that series was first observed and mapped. Iuka and Pheba, for example, are the names of two soil series. All the soils in the United States having the same series name are essentially alike in natural characteristics.

Many soil series contain soils that are alike except for the texture of their surface layer. According to this difference in texture, separations called soil types are made. Within a series, all the soils having a surface layer of the same texture belong to one soil type. Guin gravelly sandy loam is a soil type in the Guin series.

Some soil types vary so much in slope, degree of erosion, number and size of stones, or some other feature affecting their use, that practical suggestions about their management could not be made if they were shown on the soil map as one unit. Such soil types are divided into soil phases. The name of a soil phase indicates a feature that affects management. For example, Guin gravelly sandy loam, 2 to 5 percent slopes, is one of several phases of Guin gravelly sandy loam, a soil type that ranges from nearly level to steep.

After a fairly detailed guide for classifying and naming the soils had been worked out, the soil scientists drew soil boundaries on aerial photographs. They used photos for their base map because they show woodlands, buildings, field borders, trees, and similar detail that greatly help in drawing boundaries accurately. The soil map in the back of this report was prepared from the aerial photographs.

The areas shown on a soil map are called mapping units. On most maps detailed enough to be useful in planning management of farms and fields, a mapping unit is nearly equivalent to a soil type or a phase of a soil type. It is not exactly equivalent, because it is not practical to show on such a map all the small, scattered bits of soil of some other kind that have been seen within an area that is dominantly of a recognized soil type or soil phase.

In preparing some detailed maps, the soil scientist has a problem of delineating areas in which the soils are not regularly associated geographically but have differences too slight to justify separating them. He shows these soils as one mapping unit and calls it an undifferentiated soil group. Ordinarily, an undifferentiated soil group is named for the major soil series in it, for example, Collins and Iuka soils.

Also, in most mapping there are areas to be shown that are so shallow or frequently worked by wind and water that they cannot be called soils. These areas are shown on a soil map, like other mapping units, but they are given descriptive names, such as Gullied land and Sandy alluvial land, and are called land types rather than soils.

Only part of the soil survey was done when the soil scientist had named and described the soil series and mapping units and had shown the location of the mapping units on the soil map. The mass of detailed information he had recorded then needed to be presented in different ways for different groups of users, among them farmers, managers of woodlands, and engineers.

To do this efficiently, he had to consult with persons in other fields of work and jointly prepare with them groupings that would be of practical value to different users. Such groupings are the capability classes, subclasses, and units, designed primarily for those interested in producing the short-lived crops and tame pasture; woodland suitability groups, for those who need to manage wooded tracts; and the classifications used by engineers who build highways or structures to conserve soil and water.

General Soil Map

After study of the soils in a locality and the way they are arranged, it is possible to make a general map that shows the main patterns of soils. Such a map is the colored soil map in the back of this report. The general soil areas on this map are called soil associations. Each kind of general soil area, or association, as a rule, contains a few major soils and several minor soils, in a pattern that is characteristic, although not strictly uniform.

The soils within any one association are likely to differ greatly among themselves in some properties; for example, slope, depth, stoniness, or natural drainage. Thus, the general map does not show the kind of soil at any particular place, but a pattern that has in it several kinds of different soils.

The soil associations are named for the major soil series in them, but, as already noted, soils of other series may also be present. The major soil series of one soil association may also be present in other areas but in a pattern different enough to require a boundary.

The general map that shows patterns of soils is useful to people who want a general idea of the soils, who want to compare different parts of a county, or who want to know the possible location of good-sized areas suitable for a certain kind of farming or other land use.

Soils Formed in or Influenced by Windblown Sediments

Several associations in this county are made up of soils formed in or influenced by windblown sediments. These sediments, called loess, overlie coastal plain material and form a layer that is 2 to 4 feet thick.

Originally, the entire county was covered by this silty material. The loess was thicker in the western part of the county than in the eastern part. Now, in steep areas, geologic erosion has removed the mantle of loess and has exposed the coastal plain material. However, loess still covers most of the gently sloping part of the county.

In three soil associations in this county, the soils formed in or were influenced by loess. Two of these associations are on uplands. The third is along streams or on flood plains.

1. Providence-Bude association

Moderately well drained to somewhat poorly drained soils with dense subsoil (fragipan) on gently sloping uplands

This association consists of broad areas of nearly level or gently sloping soils of the uplands. The major soils are moderately well drained to somewhat poorly drained; they were formed in a thin mantle of loess that overlies coastal plain material.

The association makes up about 45 percent of the acreage in the county. The largest area is in the central part of the county. It is on a long ridge that acts as a divide for the local watersheds.

The Providence and Bude are the major soils in this association. The Providence soils are on narrow ridgetops and on moderate side slopes. The Bude soils are generally in large areas in the uplands and are nearly level to gently sloping. The soils of both series have a surface layer of grayish-brown silt loam and a subsoil of strong-brown silty clay loam. The Providence soils have a dense subsoil layer, called a fragipan, at a depth of 20 to 26 inches, and the Bude soils, a fragipan at a depth of 14 to 18 inches.

Minor soils in this association are the Falaya, which are somewhat poorly drained, and the Guin and Ruston soils, which are well drained. The Falaya soils are in small areas on the bottom lands, and the Ruston soils, in small areas on uplands. The Guin soils are on steep escarpments. They are extremely gravelly.

The Providence soils make up about 45 percent of the association; the Bude soils, 35 percent; the Falaya soils, 10 percent; the Guin soils, 5 percent; and the Ruston soils, 5 percent. More than half of the association consists of soils in capability class III, suitable for cultivation, but greatly limited by slope or other features. The soils of the association are used mainly for pasture, but a small acreage is in forest or is used for tilled crops.

Many of the dairy farms of the county and several general farms are within this association. Most of the general farms are small. For the most part, they are moderately productive and are owned by the operator. Cotton and corn are the main crops. A large number of the farmers or members of their families work in industry.

2. *Providence-Guin-Boswell-Ruston association*

Moderately well drained, silty soils on narrow ridgetops, and well drained to excessively drained soils on strongly sloping to very steep side slopes

This association consists mainly of soils on narrow ridgetops and on strongly sloping to very steep side slopes. The Providence, Guin, Boswell, and Ruston are the major soils in the association. The Providence soils are moderately well drained and formed in a thin layer of loess over coastal plain material. The Ruston soils are well drained and deep. They formed in coastal plain material. The Guin and Boswell soils vary in drainage and in depth.

The surface layer of the Providence soils is silt loam, and that of the Guin soils is gravelly sandy loam. The surface layer of the Boswell soils is silt to loam, and that of the Ruston soils is loam to sandy loam. The Providence soils have a subsoil of silty clay loam and have a fragipan. The Guin and Boswell soils have a subsoil of gravelly sandy loam to clay, and the Ruston soils, a subsoil of sandy clay loam.

This association occupies about 20 percent of the county and is in the northwestern part. The Providence soils are on the narrow ridgetops and on the strongly sloping side slopes; the Guin and Boswell soils are mainly on the very steep side slopes; and the Ruston soils are on the steep to very steep side slopes.

Minor soils in this association are the Falaya and Bude, which are somewhat poorly drained. The Falaya soils are in narrow draws, where they have formed in local alluvium. The Bude soils are on the wider, gently sloping ridges.

The Providence soils make up about 35 percent of the association; the Guin and Boswell soils, 25 percent; the Ruston soils, 20 percent; the Bude soils, 10 percent; and the Falaya soils, 10 percent. More than half of the association consists of soils in capability classes VI and VII, which are generally not suitable for cultivation.

About 7,000 acres of this association is in the Homochitto National Forest. Also within the association are a number of tree farms and livestock farms where beef cattle are raised. There are some general farms, where cotton and corn are the chief crops. Most of the farms are small, and most of them are moderately productive. They are generally owned by the operator. A large number of the farmers or members of their families work in industry.

3. *Falaya-Waverly-Collins association*

Moderately well drained to poorly drained, silty soils on flood plains

This association consists of nearly level soils on flats along the major streams in the county. The soils have formed in recent, silty alluvium; most of them have a surface layer and a subsoil of silt loam.

The largest area of this association is along Bogue Chitto River. Smaller areas are along the Homochitto River, McCall Creek, Little Bahala Creek, Fair River, Amite River, and Topisaw and West Topisaw Creeks. The association occupies about 5 percent of the county.

The Falaya, Waverly, and Collins are the major soils in this association. The Falaya soils are somewhat poorly drained and are the most extensive. They are on large flats throughout the association. The Waverly soil is poorly drained. It is on large flats and in depressions near the uplands, but it also occupies wide areas of bottom lands. The Collins soils, which are moderately well drained, occur in many places in small areas near streams.

The Falaya soils have a surface layer that is dark grayish brown to brown; the Waverly soil, a surface layer that is grayish brown; and the Collins soils, a surface layer that is brown to grayish brown. Below the surface layer, the Falaya soils are brown to a depth of 14 inches and the Collins soils are brown to a depth of 20 inches. The Waverly soil is gray to grayish brown below a depth of 6 inches.

Minor soils in this association are the Hatchie, which are somewhat poorly drained, and the Freeland, which are moderately well drained. These soils are nearly level to gently sloping and are on terraces. They are mapped as an undifferentiated unit. Also in the association are the Collins and Iuka soils, which, like the Hatchie and Freeland soils, have been mapped as an undifferentiated unit. The Collins and Iuka soils are moderately well drained and are on bottom lands.

The Falaya soils make up about 50 percent of the association; the Waverly soil, 30 percent; the Collins soils, 10 percent; the Hatchie and Freeland soils, 8 percent; and the Collins and Iuka soils, 2 percent. About half of the acreage is in capability class III. The soils are used mainly for pasture and forest, but a small acreage is in tilled crops.

Many of the farms within this association are small. Most of them are moderately productive and are owned by the operator. There are several general farms. Cotton, oats, and corn are the main crops.

Soils Formed in Coastal Plain Materials

The soils of this group formed in unconsolidated materials, or coastal plain sediments, that were laid down during the Pliocene period when the sea covered this area. After this area emerged from the sea, it was covered by a thin mantle of windblown sediments, or loess, which became mixed with the uppermost part of the coastal plain material.

The influence of the loess is evident on the broad ridges, where the soils have a surface layer of silt loam. On the side slopes geologic erosion has removed the loess, and there the soils have formed mainly in sandy coastal plain material. In the more nearly level parts of the uplands where geologic erosion has been least active, there is loessal material throughout the profile.

The two associations, which consist of soils formed in coastal plain material, are both in the uplands.

4. Guin-Boswell-Dulac association

Moderately well drained, silty and clayey soils on ridges, and well-drained to excessively drained, gravelly soils on steep to very steep side slopes

This association consists mainly of soils on ridges and on the steep to very steep side slopes. The Guin, Boswell, and Dulac are the major soils in the association. The Guin soils formed in coastal plain material and have a surface layer and subsoil of gravelly sandy loam. The Boswell soils formed in coastal plain material and have a surface layer of silt loam, loam, or sandy loam that overlies a subsoil of clay. The Dulac soils formed in a thin mantle of loess. Their upper layers are silty, and these soils have a fragipan.

This association occupies about 10 percent of the county. It is in the northeastern part.

The Guin and Boswell soils are on the steep to very steep side slopes. Boswell soils are also with the Dulac soils on narrow to broad ridgetops and on moderately sloping side slopes.

Minor soils of this association are the Providence soils, which are on ridgetops and are moderately well drained; the Ruston soils, which are on steep to very steep side slopes and are well drained; and the Falaya soils, which are in narrow draws and are somewhat poorly drained.

The Guin and Boswell soils, mapped together, make up about 45 percent of this association; Dulac and Boswell soils, mapped together, 35 percent; Ruston soils, 10 percent; Providence soils, 8 percent; and Falaya soils, 2 percent. Slightly less than one-third of this association consists of soils in capability class III. A little more than one-third consists of soils in capability class VII. The other soils within the association are in capability classes II, IV, and VI.

This association is mainly in forest. Private companies have fairly large holdings in the northern part of the association. A small acreage is in pasture or is used for tilled crops. Also within the association are a number of tree farms, and livestock farms where beef cattle are raised. There are some general farms, where cotton and corn are the chief crops. Many of the farms are small, and most of them are moderately productive. They are generally owned by the operator.

5. Ora-Ruston-Bude association

Moderately well drained to somewhat poorly drained, silty soils on broad ridges, and well-drained, sandy soils on moderate to very steep side slopes

This association consists mainly of soils on broad ridgetops, on moderate side slopes, and on steep to very steep side slopes adjacent to the larger bottoms. The Ora, Ruston, and Bude soils are the major soils in the association. The Ora and Ruston soils are on broad to narrow ridgetops and on moderate side slopes; the Ruston soils are on strongly sloping to very steep side slopes; and the Bude soils are on broad ridgetops.

The Ora and Ruston soils, formed in coastal plain material, are moderately well drained to well drained. The Bude soils, formed in a thin mantle of loess over coastal plain material, are somewhat poorly drained. In most places the surface layer of the Ora and Bude soils is silt loam. The Ora soils have a subsoil of yellowish-red loam, and the Bude soils have a subsoil of strong-brown silty clay loam. The soils of both series have a fragipan. The surface layer of the Ruston soils is sandy loam to loam, and their subsoil is red to yellowish-red sandy loam to sandy clay loam.

This association occupies about 20 percent of the county. It is in the southeastern and south-central parts.

Minor soils in this association are the Falaya, which are somewhat poorly drained and occupy small areas of bottom lands; the Pheba soils, which are somewhat poorly drained and are on broad ridgetops; the Guin, which are well drained and are on very steep slopes; and the Providence, which are moderately well drained and are on narrow, gently sloping ridgetops.

The Ora and Ruston soils, mapped as an undifferentiated soil unit, make up about 30 percent of the association; Ruston soils, mapped separately, 30 percent; Bude soils, 15 percent; Falaya soils, 10 percent; Pheba soils, 5 percent; Guin soils, 5 percent; and Providence soils, 5 percent. Slightly less than one-third of this association consists of soils in capability class II, and less than one-third consists of soils in capability class III. The other soils within the association are in classes IV, VI, and VII.

The soils in this association are used mainly for pasture or are in trees, but a small acreage is in tilled crops. A number of livestock farms, where beef and dairy cattle are raised, are within the association. There are several general farms. Cotton, oats, and corn are the chief crops. Many of the farms are small, and most of them are moderately productive. They are generally owned by the operator.

Use and Management of the Soils

This section has several main parts. The first describes general management practices, suitable for field crops and pasture, that are applicable to all of the soils in the county. The second explains the system the Soil Conservation Service uses in grouping soils according to their capability; it also places the soils of the county in capability units, or, as they are sometimes called, management groups. The third gives estimated yields per acre of the principal crops grown under two levels of management. Following the information about estimated yields is a discussion of the suitability of the soils for growing trees for wood products and a description of practices that can be used to help conserve wildlife. Finally, there is a discussion of the engineering uses of the soils.

General Management Needs

In the following pages management practices that apply in general to all of the soils of Lincoln County are discussed. The first part gives statements about management of cropland, and the second part, statements about the management of pastures.

Management of cropland.—Some principles of good management apply to all of the tillable soils in the county. These include using a suitable cropping system, returning crop residues to the soil, establishing terraces and grassed waterways, and arranging the rows properly to help control erosion and improve drainage. They also include using good tillage practices and applying adequate amounts of fertilizer and lime.

A suitable cropping system is one that includes a cover crop. The cover crop helps to control erosion and adds to or maintains the supply of organic matter. It needs to be planted early in fall and allowed to grow as late in spring as practical. The best results are obtained if the cover crop is allowed to go to seed. Crops that are planted after a cover crop has been grown withstand drought better than those that follow other crops, because the cover crop helps to make the soil more porous. Suitable cropping systems are described under each capability unit.

The residues from crops need to be left on the surface to provide a protective covering and to add organic matter to the soil. One of the best ways of handling crop residues is to shred the material and distribute it evenly on the surface. The field should never be burned over.

On the gently sloping to sloping soils, good management is needed to control erosion. This includes the use of a suitable cropping system. Erosion by water is a serious problem in many places in the county. The loss of any of the surface soil reduces the supply of organic matter and plant nutrients. It also makes the soil less permeable. As a result, more water runs off, the hazard of erosion becomes greater, and the supply of available moisture decreases.

Water may cause either sheet or gully erosion. The degree of erosion depends on the length and steepness of the slopes; on the texture, structure, and permeability of the soil; and on the vegetation.

Among the practices that will help control water erosion are the following: (1) Establishing terraces on slopes that do not exceed 8 percent; (2) seeding suitable native and tame grasses in waterways and outlets; (3) diverting water that runs off higher areas; (4) tilling and planting on the contour or parallel to the terraces; (5) utilizing crop residues; and (6) installing dams, grade stabilization structures, or other structures if they are needed.

Good tillage practices are necessary for high yields. Frequent tillage destroys the structure of the soil. It causes the surface layer to become powdery so that it will not absorb water and is readily eroded. Frequent tillage also destroys organic matter. Generally, a good practice is to till only enough to prepare a good seedbed and to control weeds and volunteer growth.

A tillage pan, also called a plowpan, has formed below the plow layer in some of the soils. A pan is most common in the silt loams, but some of the sandy soils also have a pan. A pan develops because the soil is always tilled at the same depth. Also, the wheels of the tractor compress the plow layer if the soil is moist, and the finer particles of clay move downward to fill the fine pores in the pan. Consequently, a platy structure forms below the plow layer.

To prevent a plowpan from forming, vary the depth of plowing and do not till when the soil is moist. Growing deep-rooted legumes may help to prevent a pan from forming or may help to correct one that has formed.

For the soils of this county, a complete fertilizer is generally required if good yields are to be obtained. Nitrogen is the principal fertilizer needed for most of the crops commonly grown. Bulletins that give recommendations and that are based on recent experiments with different kinds of fertilizer can be obtained from the Mississippi Agricultural Experiment Station.

Some crops, especially legumes, need lime. The amount of lime needed to raise the soil reaction to a designated pH can be determined by testing the soil. Soil tests are also valuable to determine the amount of phosphate and potash needed. Soil testing is a free service that is offered to the farmers of the county. Sample boxes, mailing cartons, and instructions for soil testing are available at the office of the county agent.

Management of pastures.—The raising of beef cattle and dairy cattle and, to some extent, sheep, has become an important enterprise in Lincoln County in the past 15 years. As a result the acreage in improved pastures and hay crops has increased.

Most long-range grazing programs are built around the use of perennial grasses and legumes grown on improved pastures. Some pastures are rotated with field crops. Small grains, ryegrass, millet, and other annual crops are suitable for finishing feeder cattle. They can also be used to supplement the forage in perennial pastures used for dairy cows.

The most practical mixture for seeding permanent pastures is one that includes both summer and winter perennial grasses. Bahiagrass, bermudagrass, or tall fescue grown with a suitable legume can be used for this purpose. The legume is seeded with the perennial grass to supply nitrogen to the grass and to improve the quality of the forage. The following are suggestions for suitable pasture mixtures:

On steep, well-drained, sandy soils:

1. Bahiagrass grown with crimson clover or vetch.
2. Bermudagrass grown with crimson clover or vetch.

On gently sloping, silty soils:

1. Bahiagrass grown with crimson clover, wild winter peas, or whiteclover.
2. Dallisgrass grown with whiteclover or wild winter peas.
3. Tall fescue and wild winter peas.
4. Coastal bermudagrass and wild winter peas.

On soils of bottom lands:

1. Bahiagrass grown with whiteclover.
2. Tall fescue grown with whiteclover.
3. Dallisgrass grown with whiteclover.

The pasture mixtures mentioned are given only as general suggestions. For more details on planning a pasture and for information about the rates of seeding, dates of planting, and rates at which fertilizer should be applied, consult a technician of the Soil Conservation Service.

Capability Groups of Soils

The capability classification is a grouping of soils that shows, in a general way, how suitable they are for most kinds of farming. It is a practical grouping based on the limitations of the soils, the risk of damage when they are used, and the way they respond to treatment.

In this system all the kinds of soil are grouped at three levels, the capability class, subclass, and unit. The eight capability classes in the broadest grouping are designated by Roman numerals I through VIII. In class I are the soils that have few limitations, the widest range of use, and the least risk of damage when they are used. The soils in the other classes have progressively greater natural limitations. In class VIII are soils and landforms so rough, shallow, or otherwise limited that they do not produce worthwhile yields of crops, forage, or wood products.

The subclasses indicate major kinds of limitations within the classes. Within most of the classes, there can be as many as four subclasses. The subclass is indicated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* means that water in or on the soil will interfere with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the country, indicates that the chief limitation is a climate that is too cold or too dry.

In class I (none in Lincoln County) there are no subclasses, because the soils of this class have few or no limitations. Class V (none in Lincoln County) can contain, at the most, only subclasses *w*, *s*, and *c*, because the soils in it have little or no susceptibility to erosion but have other limitations that limit their use largely to pasture, range, woodland, or wildlife.

Within the subclasses are the capability units, groups of soils enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity and other responses to management. Thus, the capability unit is a convenient grouping of soils for making many statements about their management. Capability units are generally identified by numbers assigned locally, for example, A7–IIe–5 or A7–IIIe–4.

Soils are classified in capability classes, subclasses, and units in accordance with the degree and kind of their permanent limitations; but without consideration of major, and generally expensive, landforming that would change the slope, depth, or other characteristics of the soil; and without consideration of possible, but unlikely, major reclamation projects.

Lincoln County has approximately 59,450 acres of subclass IIe land; 6,800 acres of subclass IIw land; 49,850 acres of subclass IIIe land; 95,650 acres of subclass IIIw land; 44,000 acres of subclass IVe land; 11,300 acres of subclass IVw land; 21,850 acres of subclass VIe land; and 57,300 acres of subclass VIIe and VIIs land. In addition, there is approximately 28,750 acres in other uses, such as urban and built-up areas, roads, and highways. These figures suggest that it would be possible to have approximately 66,300 acres in crops other than grasses and legumes; 200,650 acres in grasses and legumes; and 79,150 acres in trees.

The capability classes, subclasses, and units in which the soils of Lincoln County are classified are defined in the listing that follows. The soils were assigned to capability units on a statewide basis. Because not all of the capability units in the State are represented in this county, the numbering of the units may not be consecutive. For example, no soils of capability unit A7–IIe–4 have been recognized in Lincoln County. Therefore, this capability unit is not discussed in this report.

Capability units that begin with A7 are in the loessal resource area, and those that begin with A3 are in the coastal plain resource area.

Class I.—Soils with few limitations that restrict their use. (None in Lincoln County.)

Class II.—Soils that have some limitations that reduce the choice of plants or that require moderate conservation practices.

- Subclass IIe: Soils subject to moderate erosion if they are not protected.
  - Unit A7–IIe–5: Gently sloping, moderately well drained, silty soils, dominantly with a fragipan.
  - Unit A3–IIe–7: Gently sloping, moderately well drained to well drained silt loams to sandy loams, dominantly with a fragipan.
- Subclass IIw: Soils that have moderate limitations because of excess water.
  - Unit A7–IIw–1: Nearly level, moderately well drained, silty soils of bottom lands that are subject to overflow.

Class III.—Soils that have severe limitations that reduce the choice of plants, or that require special conservation practices, or both.

Subclass IIIe: Soils subject to severe erosion if they are cultivated and not protected.

Unit A7–IIIe–4: Moderately sloping, moderately well drained, silty soils, dominantly with a fragipan.

Unit A7–IIIe–5: Moderately sloping, somewhat poorly drained, silty soils that have a fragipan.

Unit A7–IIIe–9: Gently sloping, moderately well drained, severely eroded, silty soils with a fragipan.

Unit A3–IIIe–7: Moderately sloping, moderately well drained to well drained, silty to loamy soils, dominantly with a loam fragipan.

Unit A3–IIIe–8: Gently sloping, moderately well drained, severely eroded, silty to loamy soil with a loam fragipan.

Subclass IIIw: Soils that have severe limitations because of excess water.

Unit A7–IIIw–1: Nearly level, somewhat poorly drained, silty soils of bottom lands that are subject to overflow.

Unit A7–IIIw–2: Nearly level, dominantly somewhat poorly drained, silty soils that have a fragipan.

Unit A7–IIIw–3: Gently sloping, dominantly somewhat poorly drained, silty soils that have a fragipan.

Unit A3–IIIw–2: Gently sloping, somewhat poorly drained soils that have a loam fragipan.

Class IV.—Soils that have very severe limitations that restrict the choice of plants, or that require very careful management, or both.

Subclass IVe: Soils subject to very severe erosion if they are cultivated and not protected.

Unit A7–IVe–5: Moderately sloping to sloping, moderately well drained, severely eroded, silty soils that have a fragipan or a slowly permeable layer.

Unit A7–IVe–6: Strongly sloping, moderately well drained, silty soil that has a fragipan.

Unit A7–IVe–7: Gently sloping to moderately sloping, somewhat poorly drained, severely eroded, silty soils that have a fragipan.

Unit A3–IVe–1: Strongly sloping, deep, well-drained, sandy soils.

Unit A3–IVe–9: Moderately sloping, severely eroded, moderately well drained to well drained soils, dominantly with a fragipan.

Subclass IVw: Soils that have very severe limitations for cultivation because of excess water.

Unit A7–IVw–1: Nearly level, poorly drained, silty alluvial soils that are subject to frequent overflow.

Unit A7–IVw–2: Nearly level, poorly drained, silty soils in upland depressions, on flats, or on stream terraces.

Class V.—Soils not likely to erode but that have other limitations, impractical to remove without major reclamation, that limit their use largely to pasture or range, woodland, or wildlife food and cover. (None in Lincoln County.)

Class VI.—Soils that have severe limitations that make them generally unsuitable for cultivation and that limit their use largely to pasture or range, woodland, or wildlife food and cover.

Subclass VIe: Soils severely limited, chiefly by risk of erosion if protective cover is not maintained.

Unit A3–VIe–1: Strongly sloping, well-drained, loamy soils.

Unit A3–VIe–2: Strongly sloping, well-drained, severely eroded soils that have a surface layer of loam to sandy clay loam.

Unit A3–VIe–5: Strongly sloping, moderately well drained to excessively drained soils that have variable textures.

Subclass VIs: Soils generally unsuitable for cultivation and limited for other uses by their moisture capacity, stones, or other features.

Unit A3–VIs–1: Nearly level, very droughty, sandy and gravelly soils of bottom lands.

Unit A3–VIs–2: Droughty, gravelly and sandy, gently sloping to strongly sloping soils.

Class VII.—Soils that have very severe limitations that make them unsuitable for cultivation without major reclamation, and that restrict their use largely to grazing, woodland, or wildlife.

Subclass VIIe: Soils very severely limited, chiefly by risk of erosion if protective cover is not maintained.

Unit A7–VIIe–3: Very severely eroded, gullied land.

Unit A3–VIIe–1: Steep to very steep, well-drained soils that have a surface layer of sandy loam to sandy clay loam and a medium-textured subsoil.

Unit A3–VIIe–4: Steep to very steep, moderately well drained to excessively drained, variable textured soils.

Subclass VIIs: Soils very severely limited by moisture capacity, stones, or other soil features.

Unit A3–VIIs–1: Droughty, gravelly and sandy, steep to very steep soils.

Class VIII.—Soils and landforms that have limitations that preclude their use, without major reclamation, for commercial production of plants; and that restrict their use to recreation, wildlife, water supply, or esthetic purposes. (None in Lincoln County.)

Management by capability units

The soils in a given capability unit have about the same limitations and susceptibility to damage, need about the same kind of management, and respond to management in about the same way. In the following pages each capability unit is described, the soils in it are named, and management for the group is suggested.

CAPABILITY UNIT A7–IIe–5

This capability unit consists of gently sloping, moderately well drained, silty soils that are slightly to moderately eroded. All of the soils, except the Boswell, have

Figure 2.—Bahiagrass pasture on Providence silt loam, 2 to 5 percent slopes, eroded.

a fragipan at a depth of about 20 to 24 inches. This compact layer retards the movement of roots, air, and moisture. Although the Boswell soils lack a fragipan, they have a slowly permeable, clayey subsoil. The surface layer of the soils in this unit is chiefly silt loam and is at least 4 to 6 inches thick. The subsoil is silty clay loam to heavy silt loam. The soils in this unit are—

Dulac and Boswell soils, 2 to 5 percent slopes.
Dulac and Boswell soils, 2 to 5 percent slopes, eroded.
Providence silt loam, 2 to 5 percent slopes.
Providence silt loam, 2 to 5 percent slopes, eroded.

These soils can be worked easily, but they tend to crust and pack when bare. They are subject to erosion if they are not protected. The rate of infiltration is fairly slow. Above the fragipan or layer of clay, water moves at a moderate rate, but it moves slowly through the fragipan. The available moisture-holding capacity is generally adequate for plants. These soils contain little organic matter, are moderate in fertility, and are strongly acid. They respond well to good management.

The supply of organic matter in these soils needs to be built up and maintained, and the soils need a complete fertilizer and lime. A good supply of organic matter improves the structure of the soils and increases the rate of infiltration and moisture-holding capacity. It also makes bacteria more active, reduces the rate of runoff, and keeps the soils from crusting and packing. The supply of organic matter can be increased by including a sod crop in the cropping system and protecting the soils with a cover crop.

The soils of this unit are well suited to cotton, annual lespedeza, and small grain, and they are fairly well suited to sorghum, corn, and soybeans. Good yields of forage are obtained (fig. 2) if they are used for pastures of bermudagrass, ryegrass, crimson clover, annual lespedeza, bahiagrass, and johnsongrass. Dallisgrass, tall fescue, and whiteclover do fairly well. The soils are well suited to pines and hardwoods.

The following are examples of suitable cropping systems:

4 years of sod, followed by 2 years of row crops with a winter cover crop after each.
3 years of sod, followed by 3 years of row crops with a winter cover crop after each.
3 years of small grain and lespedeza, followed by 2 years of row crops with a winter cover crop after each.

If these soils are used for row crops, they will need vegetated outlets, terraces, and contour cultivation. In places diversions may be used if runoff from higher lying areas is a problem.

CAPABILITY UNIT A3-IIe-7

This capability unit consists of gently sloping, slightly to moderately eroded silt loams to sandy loams. The Ora soils are moderately well drained and have a fragipan at a depth of about 24 inches. This compact layer retards the movement of roots, air, and moisture. The Ruston soils are well drained and lack a fragipan. The surface layer of the soils in this unit ranges from loam or silt loam to sandy loam in texture. The subsoil is friable sandy clay loam to loam. The soils in this unit are—

Ora silt loam, 2 to 5 percent slopes.
Ora silt loam, 2 to 5 percent slopes, eroded.
Ora and Ruston soils, 2 to 5 percent slopes, eroded.

These soils can be worked easily, but they tend to crust and pack when bare. The rate of infiltration is moderate. In the Ora soils permeability is moderate above the fragipan and slow in the fragipan. The available moisture-holding capacity is usually adequate for plants. The soils contain little organic matter, but crops grown on them make good yields.

The supply of organic matter in these soils needs to be built up and maintained, and the soils also need a complete fertilizer and lime. A good supply of organic matter increases the rate of infiltration and the moisture-holding capacity. It also makes bacteria more active, reduces the rate of runoff, and keeps the soils from crusting and packing. The supply of organic matter can be increased by including sod in the cropping system and managing crop residues well.

The soils of this unit are well suited to corn, cotton, small grain, sudangrass, millet, sorghum, and truck crops. They are fairly well suited to annual lespedeza, dallisgrass, tall fescue, and white clover, and they are well suited to bermudagrass, bahiagrass, rescuegrass, and crimson clover grown for pasture. Pines grow well on these soils.

The following are examples of suitable cropping systems:

Sod grown for half the time, and row crops grown the other half.
3 years of sod, followed by 2 years of row crops with a winter cover crop after each.

If these soils are used for row crops, they will need vegetated outlets, terraces, and proper row arrangement. Diversions may be needed if runoff from higher lying areas is a problem.

CAPABILITY UNIT A7-IIw-1

This capability unit consists of nearly level, moderately well drained, silty soils of bottom lands that are subject to overflow. Crops on these soils make good yields. The soils have a surface layer of silt loam to loam. The underlying soil material has a slightly heavier texture than the surface layer and consists of silt loam or sandy loam. The soils in this unit are—

Collins silt loam.
Collins and Iuka soils.

These soils can be worked easily, but they tend to crust and pack when bare. Infiltration and permeability are moderate, and the available moisture-holding capacity is adequate for plants to grow. The soils contain little organic matter. Overfalls and caving streambanks are a problem in many places.

The supply of organic matter needs to be built up as high as feasible in these soils and should be maintained at a high level. A good supply of organic matter improves the structure of the soils and increases the rate of infiltration and the moisture-holding capacity. It also makes bacteria more active and keeps the soils from crusting and packing. Including sod in the cropping system, adding fertilizer to row crops, and managing crop residues will help to increase the supply of organic matter. These soils need nitrogen. Many of the areas will also need a complete fertilizer and lime for high yields.

The soils of this unit are well suited to cotton, corn, small grain, soybeans, truck crops, and sorghum. They are also well suited to bermudagrass, dallisgrass, tall fescue, lespedeza, bahiagrass, white clover, and red clover grown for pasture. Lowland hardwoods and loblolly pines of good quality grow well.

The following are examples of suitable cropping systems:

3 years of sod, followed by 3 years of row crops with a winter cover crop after each.
3 years of oats and lespedeza, followed by 3 years of row crops with a winter cover crop after each.

Row crops grown with a winter cover crop need to have large amounts of fertilizer added, and the residues from the crop should be well managed. If the soils are used for row crops, the rows need to be arranged properly. W-type ditches are required to remove excess water, and in some places secondary drainage ditches ought to be provided. Caving streambanks and overfalls should be stabilized.

CAPABILITY UNIT A7-IIIe-4

This capability unit consists of moderately sloping, moderately well drained, silty soils of uplands that are slightly to moderately eroded. All of the soils, except the Boswell, have a fragipan at a depth of about 20 to 24 inches. This compact layer retards the movement of roots, air, and moisture. The Boswell soils lack a fragipan, but they have a slowly permeable, clayey subsoil. In most places the soils have a surface layer of silt loam and a subsoil of silty clay loam. The soils in this unit are—

Dulac and Boswell soils, 5 to 8 percent slopes.
Dulac and Boswell soils, 5 to 8 percent slopes, eroded.
Providence silt loam, 5 to 8 percent slopes.
Providence silt loam, 5 to 8 percent slopes, eroded.

These soils can be worked easily, but they tend to crust and pack when bare. Their slopes are strong enough so that erosion is likely to be severe. The rate of infiltration is fairly slow. Permeability is moderate above the fragipan and slow in the fragipan or clayey layer. The available moisture-holding capacity is generally adequate for plants. The soils contain little organic matter. They are moderate in fertility and respond well to good management.

These soils need to be protected by a cover of plants or crop residues as much of the time as feasible. The cover reduces the rate of runoff and helps to keep the soils from eroding. The supply of organic matter needs to be built up and maintained, and the soils require a complete fertilizer and lime. A good supply of organic matter improves the structure of the soils and increases the rate of infiltration and moisture-holding capacity. It also makes bacteria more active, reduces the rate of runoff, and keeps the soils from crusting and packing. The supply of organic matter can be increased by including a sod crop in the cropping system and using crop residues as a mulch.

These soils are better suited to sod crops than to row crops, but they are fairly well suited to row crops. Cotton, annual lespedeza, and small grain grow well, and sorghum, corn, soybeans, and similar crops grow fairly well. The soils are also fairly well suited to bermudagrass, ryegrass, bahiagrass, crimson clover, annual lespedeza, and white clover grown for pasture. Pines and hardwoods grow well.

The following are examples of suitable cropping systems:

4 years of sod, followed by 2 years of row crops with a winter cover crop after each.
3 years of small grain and lespedeza, followed by 1 year of a row crop.

If these soils are used for row crops, they will need vegetated outlets and terraces to help control runoff and erosion. They will also need to be tilled on the contour.

CAPABILITY UNIT A7-IIIe-5

This capability unit consists of moderately sloping, somewhat poorly drained, silty soils that are slightly to moderately eroded. The soils are on uplands and formed in a thin mantle of loess over coastal plain material. A fragipan that retards the movement of roots, air, and moisture is at a depth of about 14 to 17 inches. The surface layer of these soils is silt loam, and their subsoil is clay. The soils in this unit are—

Bude silt loam, 5 to 8 percent slopes.
Bude silt loam, 5 to 8 percent slopes, eroded.

These soils can be tilled fairly easily, but they tend to crust when bare. The rate of infiltration is fairly slow. Permeability is moderate above the fragipan and slow in the fragipan. In most places the available moisture-holding capacity is limited because the fragipan is near the surface; therefore, roots cannot penetrate deep enough to get the necessary plant nutrients and water. These soils are cold. They contain little organic matter and are low in fertility. Because water moves very slowly through the fragipan, there are periods when the soils are too wet and other periods when they are too dry.

The supply of organic matter in these soils needs to be built up and maintained, and the soils also need a complete fertilizer and lime. A good supply of organic matter improves the structure of the soils. It also keeps the soils from crusting and packing and makes bacteria more active. The supply of organic matter can be increased by including a sod crop in the cropping system.

The sod should be overseeded with a winter grass or legume.

These soils are better suited to grass than to row crops. They are well suited to sorghum and are fairly well suited to cotton, corn, soybeans, and small grain. Pastures of bermudagrass, bahiagrass, wild winter peas, whiteclover, and lespedeza produce good yields. The soils are only fairly well suited to tall fescue, dallisgrass, sudangrass, and millet. Loblolly and longleaf pines grow well.

If these soils are cultivated, they will need vegetated waterways, which will provide drainage without becoming eroded. They will also need to be tilled on the contour.

CAPABILITY UNIT A7–IIIe–9

Only one soil—Providence silt loam, 2 to 5 percent slopes, severely eroded—is in this capability unit. This soil has gentle slopes and is moderately well drained. It is silty and is severely eroded. A fragipan that retards the movement of roots, air, and moisture is at a depth of about 18 to 20 inches. This soil is on uplands and formed in a thin mantle of loess over coastal plain material. The original surface layer has been almost entirely lost through erosion. The present surface layer, which is silt loam consisting chiefly of material from the upper part of the subsoil, overlies a subsoil of friable silty clay loam. In many places there are shallow gullies.

This soil can be worked fairly easily, but it tends to crust and pack when bare. The rate of infiltration is slow; there is a large amount of runoff, and the soil erodes readily if it is not protected by a cover of plants. Water moves through the upper part of the subsoil at a moderate rate, and slowly through the fragipan. The available moisture-holding capacity is fairly low. The soil contains little organic matter, and the supply of organic matter is hard to maintain. Fertility is moderate.

This soil needs to have a cover of plants or crop residues on it as much of the time as feasible. The cover helps to protect the soils from erosion. A good supply of organic matter needs to be built up and maintained, and the soil requires a complete fertilizer and lime. The organic matter improves the structure of the soil and increases the rate of infiltration and moisture-holding capacity. It also reduces the rate of runoff and keeps the soil from crusting and packing. The supply of organic matter can be increased by including a sod crop in the cropping system and protecting the soil with a cover crop.

This soil is better suited to sod crops than to row crops. Cotton, oats, wheat, and rye grow well, but the soil is only fairly well suited to corn, soybeans, and sorghum. Good yields of forage are obtained if this soil is used for pastures of bermudagrass, bahiagrass, and crimson clover. The soil is fairly well suited to dallisgrass, annual lespedeza, and whiteclover, but it is not suited to tall fescue or sudangrass. Pines grow well on this soil.

The following are examples of suitable cropping systems:

- 4 years of sod, followed by 2 years of row crops with a winter cover crop after each.
- 3 years of sod, followed by 3 years of row crops with a winter cover crop after each.
- 3 years of small grain and lespedeza, followed by 2 years of row crops with a winter cover crop after each.

If this soil is used for cultivated crops, the rows should be run on the contour and vegetated outlets provided. Terraces will also be needed.

CAPABILITY UNIT A3–IIIe–7

This capability unit consists of moderately sloping, slightly to moderately eroded silt loams to sandy loams. The Ora soils are moderately well drained and have a loam fragipan at a depth of about 20 to 24 inches. This compact layer retards the movement of roots, air, and moisture. The Ruston soils are well drained and lack a fragipan. The surface layer of the soils in this unit ranges from loam or silt loam to sandy loam in texture. The subsoil is friable loam to clay loam. The soils in this unit are—

- Ora silt loam, 5 to 8 percent slopes.
- Ora silt loam, 5 to 8 percent slopes, eroded.
- Ora and Ruston soils, 5 to 8 percent slopes.
- Ora and Ruston soils, 5 to 8 percent slopes, eroded.

These soils can be worked easily, but they tend to crust and pack when bare. Their slopes are strong enough that erosion is likely to be severe if the soils are not protected. Therefore, close-growing crops need to be grown 2 years out of every 3. Runoff is rapid, and the rate of infiltration is moderate. Permeability is moderate above the fragipan and slow in the fragipan. The available moisture-holding capacity is generally adequate for plants to grow. These soils contain little organic matter, but crops grown on them make good yields.

The supply of organic matter in these soils needs to be built up and maintained, and the soils need a complete fertilizer and lime. A good supply of organic matter increases the rate of infiltration and moisture-holding capacity. It also makes bacteria more active, reduces the rate of runoff, and keeps the soils from crusting and packing. The supply of organic material can be increased by including a sod crop in the cropping system and using the crop residues as a mulch. Overseeding a winter grass or legume in the established sod is a good practice.

These soils are better suited to sod crops than to row crops, but they are fairly well suited to row crops. Cotton, small grain, vetch, and early truck crops grow well, and the soils are fairly well suited to corn, soybeans, sudangrass, millet, sorghum, and annual lespedeza. Good yields of forage are obtained if the soils are used for pastures of bermudagrass, bahiagrass, and crimson clover. The soils are only fairly well suited, however, to dallisgrass and whiteclover, and they are not suited to tall fescue. Loblolly and longleaf pines grow well.

The following is an example of a suitable cropping system:

- 4 years of sod, followed by 2 years of row crops with a winter cover crop after each.

If these soils are used for cultivated crops, the rows should be run on the contour and vegetated outlets provided. Terraces will also be needed.

CAPABILITY UNIT A3–IIIe–8

Only one soil—Ora silt loam, 2 to 5 percent slopes, severely eroded—is in this capability unit. This gently sloping soil is moderately well drained and is severely eroded. A loam fragipan, which retards the movement of roots, air, and moisture, is at a depth of about 14 to 20 inches. Nearly all of the original surface layer has been lost through erosion. The present surface layer is silt loam and consists chiefly of material from the upper part of the subsoil. It overlies a subsoil of strong-brown, friable clay loam. In places there are gullies.

The soil is similar to the soils in capability unit A3–IIIe–7, but it has milder slopes, a slower rate of infiltration, and lower available moisture-holding capacity. It is also shallower over the compact layer and is slightly less productive of several kinds of crops that are grown locally.

This soil can be worked fairly easily, but it tends to crust and pack when bare. Runoff is rapid, and the rate of infiltration is slow. The soil erodes readily if it is not protected. Permeability is moderate above the fragipan and slow in the fragipan. The available moisture-holding capacity is limited.

A cover of plants or crop residues needs to be kept on this soil as much of the time as feasible. This cover helps to protect the soil from further erosion. The supply of organic matter needs to be built up and maintained. The soil also requires a complete fertilizer and lime. A good supply of organic matter improves the structure of the soil and increases the rate of infiltration and moisture-holding capacity. It also makes bacteria more active and keeps the soil from crusting and packing. The supply of organic material can be increased by including a sod crop in the cropping system.

This soil is better suited to sod crops than to row crops, but it is fairly well suited to row crops. Cotton, small grain, early truck crops, vetch, and wild winter peas grow well, and the soil is fairly well suited to corn, soybeans, sudangrass, annual lespedeza, sorghum, and orchards. Good yields of forage are obtained if the soil is used for pastures of bermudagrass, bahiagrass, and crimson clover. The soil is only fairly well suited, however, to whiteclover and dallisgrass, and it is not suited to tall fescue. Pines grow well on this soil.

The following are examples of suitable cropping systems:

- 2 years of close-growing crops, followed by 2 years of row crops with a winter cover crop after each.
- 4 years of sod, followed by 2 years of row crops with a winter cover crop after each.

If this soil is used for cultivated crops, the rows should be run on the contour and vegetated outlets provided. Terraces will also be needed.

CAPABILITY UNIT A7–IIIw–1

This capability unit consists of nearly level, somewhat poorly drained, silty soils of bottom lands that are subject to overflow. The surface layer of these soils is silt loam. Their subsoil is also silt loam, but it has a heavier texture than the surface layer. The soils in this unit are—

Falaya silt loam.
Falaya silt loam, local alluvium.

These soils can be worked easily, but they tend to crust and pack when bare. Streambank cutting and overfalls may be serious problems along McCall Creek and Homochitto River. Infiltration, permeability, and the available moisture-holding capacity are all moderate. The soils are cold. They contain little organic matter, but they are fairly high in fertility. A plowpan forms readily.

Figure 3.—**Secondary drainage ditch in a field of Falaya silt loam.**

The supply of organic matter in these soils needs to be built up as high as feasible, and the soils require a complete fertilizer and lime. A good supply of organic matter improves the structure of the soils, increases the rate of infiltration and the moisture-holding capacity, and keeps the soils from crusting and packing. The supply of organic matter can be increased by including a sod crop in the cropping system, using a large amount of fertilizer for row crops, and managing crop residues well.

These soils are well suited to grass and are fairly well suited to row crops. Corn, soybeans, and sorghum grow well, but the soils are only fairly well suited to cotton and small grain. Good yields of forage are obtained if the soils are used for pastures of tall fescue, bermudagrass, dallisgrass, bahiagrass, whiteclover, and winter peas.

Lowland hardwoods of good quality grow well on these soils. Pines, especially loblolly pines, that are already growing on them do well, but the soils are not suitable for planting pines.

The following are examples of suitable cropping systems:

- 3 years of grasses and legumes, followed by 3 years of row crops.
- 3 years of small grain, followed by 3 years of row crops with a winter cover crop after each.

With these cropping systems, a large amount of fertilizer is required for row crops, the soils should be protected by a winter cover crop when row crops are grown, and crop residues need to be well managed. In many places these soils need complete field drainage. Secondary V- or W-type ditches should be used to remove the excess surface water (fig. 3). In addition, the rows ought to be arranged so as to provide surface drainage, and caving streambanks and overfalls need to be stabilized. Diversion ditches may be needed.

CAPABILITY UNIT A7–IIIw–2

This capability unit consists of nearly level, dominantly somewhat poorly drained, silty soils. The soils

Figure 4.—A pasture of tall fescue on Bude silt loam, 2 to 5 percent slopes, eroded.

have a fragipan that retards the movement of roots, air, and moisture. In most places the fragipan is at a depth of about 13 to 17 inches. It is a few inches deeper, however, in the Freeland soil, which is moderately well drained. The soils in this unit are—

Bude silt loam, 0 to 2 percent slopes.
Hatchie and Freeland silt loams, 0 to 2 percent slopes.

These soils can be tilled fairly easily, but they tend to crust and pack when bare. The rate of infiltration is fairly slow. Permeability is moderate above the fragipan and slow in the fragipan. In most places the available moisture-holding capacity is limited because the fragipan is near the surface; roots cannot penetrate deep enough to get the necessary plant nutrients and water. These soils are cold. They contain little organic matter and are low in fertility. A plowpan forms readily. Because water moves very slowly through the fragipan, there are periods when the soils are too wet and other periods when they are too dry.

The supply of organic matter in these soils should be built up and maintained, and the soils need a complete fertilizer and lime. A good supply of organic material improves the structure, increases the rate of infiltration, and keeps the soils from crusting and packing. The supply of organic matter can be increased by including a sod crop in the cropping system.

These soils are better suited to sod crops than to row crops, but they are fairly well suited to row crops. Sorghum grows well, and the soils are fairly well suited to corn, soybeans, and small grain. Good yields of forage are obtained if the soils are used for pastures of bermudagrass, bahiagrass, whiteclover, and lespedeza. The soils are only fairly well suited to dallisgrass, tall fescue, sudangrass, and millet. Loblolly, shortleaf, and longleaf pines grow well.

The following are examples of suitable cropping systems:

4 years of sod, followed by 2 years of row crops with a winter cover crop after each.
3 years of small grain and lespedeza, followed by 2 years of row crops.

If these soils are used for row crops, the rows need to be arranged properly. W-type ditches are needed to remove the excess surface water.

CAPABILITY UNIT A7–IIIw–3

This capability unit consists of gently sloping, dominantly somewhat poorly drained soils that are silty and slightly to moderately eroded. The soils have a fragipan. In most places the fragipan is at a depth of about 14 to 17 inches, but it is a few inches deeper in the Freeland soils, which are moderately well drained. The material underlying the fragipan is mainly silt loam or loam.

These soils formed in a thin mantle of loess over coastal plain material. They are on uplands and on terraces along streams. Their surface layer is silt loam, and their subsoil is silty clay. The soils in this unit are—

Bude silt loam, 2 to 5 percent slopes.
Bude silt loam, 2 to 5 percent slopes, eroded.
Hatchie and Freeland silt loams, 2 to 5 percent slopes.
Hatchie and Freeland silt loams, 2 to 5 percent slopes, eroded.

These soils are similar to the soils in capability unit A7–IIIw–2, but they have stronger slopes and better surface drainage. Their surface layer is also 2 to 4 inches thinner.

The soils can be tilled fairly easily, but they tend to crust when bare. The rate of infiltration is fairly slow. Permeability is moderate above the fragipan and slow in the fragipan. In most places the available moisture-holding capacity is limited because the fragipan is near the surface; roots cannot penetrate deep enough to get the necessary plant nutrients and water. These soils are cold. They contain little organic matter and are low in fertility. Because water moves very slowly through the fragipan, there are periods when the soils are too wet and periods when they are too dry.

The supply of organic matter in these soils needs to be built up and maintained, and the soils also require a complete fertilizer and lime. A good supply of organic material improves the structure of the soils. It also keeps the soils from crusting and packing and makes bacteria more active. The supply of organic matter can be increased by including a sod crop in the cropping system. Overseeding the established soil with a winter grass or legume is a good practice.

These soils are better suited to grass than to cultivated crops. Sorghum grows well, but the soils are only fairly well suited to corn, cotton, soybeans, and small grain. The soils are also fairly well suited to tall fescue, dallisgrass, sudangrass, and millet (fig. 4). Good yields of forage are obtained if the soils are used for pastures of bermudagrass, bahiagrass, wild winter peas, whiteclover, and lespedeza. Loblolly and longleaf pines grow well.

In most places the soils will need vegetated waterways, proper row arrangement, and other practices to control water if they are used for cultivated crops.

CAPABILITY UNIT A3–IIIw–2

This capability unit consists of gently sloping, somewhat poorly drained soils that are slightly to moderately eroded. The soils have a loam fragipan at a depth of about 14 to 17 inches that retards the movement of roots, air, and moisture. The surface layer of these soils is mainly silt loam, but in places it is loam. The subsoil is clay loam or loam. The soils in this unit are—

Pheba silt loam, 2 to 5 percent slopes.
Pheba silt loam, 2 to 5 percent slopes, eroded.

These soils can be tilled fairly easily, but they tend to crust when bare. The rate of infiltration is fairly slow. Permeability is moderate above the fragipan and slow in the fragipan. In most places the available moisture-holding capacity is limited because the fragipan is near the surface; roots cannot penetrate deep enough to get the necessary plant nutrients and water. These soils are cold. Because water moves very slowly through the fragipan, there are periods when the soils are too wet and periods when they are too dry.

The supply of organic matter in these soils needs to be built up and maintained, and the soils also require a complete fertilizer and lime. A good supply of organic matter improves the structure of the soils, increases the rate of infiltration and moisture-holding capacity, and keeps the soils from crusting and packing. The supply of organic matter can be increased by including a sod crop in the cropping system and managing the crop residues well.

These soils are better suited to sod than to row crops, but they are fairly well suited to row crops. Cotton, corn, soybeans, sorghum, sudangrass, millet, small grain, and vetch grow fairly well. Good yields of forage are obtained if the soils are used for pastures of bermudagrass, bahiagrass, and annual lespedeza. The soils are only fairly well suited to tall fescue, dallisgrass, and white-clover. Loblolly and longleaf pines grow well.

The following are examples of suitable cropping systems:

3 years of close-growing crops, followed by 2 years of row crops with a winter cover crop after each.
2 years of small grain, followed by 1 year of a row crop.

If these soils are used for cultivated crops, they will generally need vegetated waterways and proper row arrangement. They may also need other practices to control water.

CAPABILITY UNIT A7-IVe-5

This capability unit consists mainly of moderately sloping to sloping, moderately well drained soils that are silty and severely eroded. In all of the soils, except the Boswell, a fragipan that retards the movement of roots, air, and moisture is at a depth of about 20 inches. Although the Boswell soil lacks a fragipan, it has a subsoil of slowly permeable clay.

The soils of this unit are on uplands. The Dulac and Providence soils formed in a thin mantle of loess over coastal plain material, and the Boswell soil, in coastal plain clay. In most places the surface layer is silt loam. In some places, however, erosion has removed the original surface layer and the present surface layer is silty clay loam that was part of the former subsoil. There are also some areas that have a surface layer of loam and a clayey subsoil. The soils in this unit are—

Dulac and Boswell soils, 5 to 8 percent slopes, severely eroded.
Providence silt loam, 5 to 8 percent slopes, severely eroded.
Providence silt loam, 8 to 12 percent slopes, severely eroded.

In this unit the hazard of erosion is severe to very severe. The soils can be tilled fairly easily, but they crust and erode readily when bare. The rate of infiltration is slow. Permeability is moderate above the fragipan and slow in the fragipan. The available moisture-holding capacity is low. The soils contain little organic matter and are moderately low in fertility.

These soils can be used occasionally for row crops, but they are better suited to permanent vegetation. The stronger slopes, especially, need a permanent cover of plants. The less sloping areas are fairly well suited to cotton and small grain. The soils in this unit are not suitable for corn and soybeans. Pastures of bermudagrass, ryegrass, annual lespedeza, sericea lespedeza, and crimson clover grow well, but the soils are poorly suited to dallisgrass, white clover, and tall fescue. Pines grow well.

The following is an example of a suitable cropping system:

4 to 6 years of sod, followed by 1 year of row crops.

If the soils are used for cultivated crops or pasture, they will need a complete fertilizer and lime. For cultivated crops, rows need to be run on the contour and vegetated outlets provided. If feasible, terraces should be constructed.

CAPABILITY UNIT A7-IVe-6

Only one soil—Providence silt loam, 8 to 12 percent slopes, eroded—is in this capability unit. This strongly sloping, moderately well drained soil is silty and is moderately eroded. It is on uplands and formed in a thin mantle of loess over coastal plain material. The surface layer of this soil is silt loam, and its subsoil is silty clay loam. A fragipan that retards the movement of roots, air, and moisture is at a depth of about 20 to 24 inches.

This soil can be tilled easily, but it crusts and erodes when bare. The rate of infiltration is fairly slow. Permeability is moderate above the fragipan and slow in the fragipan. The available moisture-holding capacity is moderately low to moderate. The soil contains little organic matter, but it is moderate in fertility.

The supply of organic matter in this soil needs to be built up and maintained. The soil also requires a complete fertilizer and lime. A good supply of organic material would improve the structure of this soil, increase the rate of infiltration and moisture-holding capacity, and keep the soil from crusting and packing. Crop residues need to be left on the surface as a mulch. Overseeding the established sod with a winter grass or legume is a good practice.

This soil is better suited to sod than to row crops, but it can be used occasionally for row crops. Cotton, annual lespedeza, and small grain make good yields. Pastures of ryegrass, annual lespedeza, and crimson clover grow well, but the soil is only fairly well suited to dallisgrass, white clover, and tall fescue.

The following is an example of a suitable cropping system:

4 to 6 years of sod, followed by 1 year of row crops.

If this soil is used for cultivated crops, the rows need to be run on the contour and vegetated outlets provided. If feasible, terraces should be constructed.

CAPABILITY UNIT A7-IVe-7

This capability unit consists of gently sloping to moderately sloping, somewhat poorly drained soils that are silty and severely eroded. The soils have a fragipan at a depth of about 10 to 15 inches that retards the movement of roots, air, and moisture. They are on uplands and they formed in a thin mantle of loess over coastal plain material.

Erosion has removed most of the original surface layer of these soils, and the present surface layer is silt loam that was formerly in the upper part of the subsoil. In some places all of the original surface layer has been lost and the present surface layer is silty clay loam that was formerly in the lower part of the subsoil. The soils in this unit are—

Bude silt loam, 2 to 5 percent slopes, severely eroded.
Bude silt loam, 5 to 8 percent slopes, severely eroded.

These soils are susceptible to erosion if they are not protected. They crust and pack fairly readily when bare. The rate of infiltration is slow. Permeability is moderate above the fragipan and slow in the fragipan. The soils contain little organic mater and are low in fertility.

A cover of plants or crop residues needs to be kept on these soils as much of the time as feasible. This cover helps to protect the soils from further erosion. The supply of organic matter needs to be built up and maintained. The soils also require a complete fertilizer and lime to maintain fertility. A good supply of organic matter improves the structure of the soils, increases the rate of infiltration, and keeps the soils from crusting and packing. The supply of organic matter can be increased by including a sod crop in the cropping system and by managing the crop residues well.

These soils are better suited to sod crops than to row crops, but they can be used occasionally for row crops. Cotton, sericea lespedeza, and small grain make fair yields. The soils are poorly suited to corn, sorghum, and soybeans. Pastures of bahiagrass and annual lespedeza grow well, but the soils are poorly suited to whiteclover and tall fescue. Pines grow well on these soils.

The following are examples of suitable cropping systems:

6 years of sod, followed by 1 year of row crops.
4 years of sericea lespedeza, followed by 1 year of row crops.

If these soils are used for cultivated crops, they will need vegetated outlets and proper row arrangement. If it is feasible, terraces should be constructed.

CAPABILITY UNIT A3–IVe–1

This capability unit consists of deep, strongly sloping, well-drained, sandy soils that are slightly to moderately eroded. The surface layer of these soils is sandy loam or loam, and their subsoil is sandy clay loam or clay loam. The soils in this unit are—

Ruston soils, 8 to 12 percent slopes.
Ruston soils, 8 to 12 percent slopes, eroded.

These soils erode readily if they are not protected. They are easy to till, but they tend to crust and pack when bare. The rate of infiltration is moderate. Runoff and permeability are rapid, and the available moisture-holding capacity is moderately low. The soils contain little organic matter, but they are high in fertility.

A cover of plants or crop residues needs to be kept on these soils as much of the time as feasible. This cover helps to protect the soils from further erosion. The supply of organic matter needs to be built up and maintained. A good supply of organic matter increases the rate of infiltration and the moisture-holding capacity. It also reduces runoff. The supply of organic matter can be increased by including a sod crop in the cropping system and by managing the crop residues well.

These soils are better suited to trees or sod than to row crops, but they can be used occasionally for row crops. Cotton, small grain, truck crops, sericea lespedeza, and vetch grow well, but the soils are only fairly well suited to corn, annual lespedeza, soybeans, and sorghum. If the soils are used for pasture, bermudagrass, bahiagrass, and crimson clover produce good yields. The soils are not suited to whiteclover, dallisgrass, and tall fescue. Loblolly, shortleaf, and longleaf pines grow well.

The following are examples of suitable cropping systems:

6 years of sod, followed by 2 years of row crops with a winter cover crop after each.
3 years of sericea lespedeza, followed by 1 year of row crops.

If these soils are used for cultivated crops, the rows need to be run on the contour and vegetated outlets provided. If it is feasible, terraces should be constructed.

CAPABILITY UNIT A3–IVe–9

This capability unit consists of moderately sloping soils that are severely eroded. The Ora soils are moderately well drained and have a fragipan at a depth of about 18 to 22 inches that retards the movement of roots, air, and moisture. The Ruston soil is well drained and lacks a fragipan. The soils are on uplands. Their surface layer is loam or silt loam, and their subsoil is clay loam or loam. The soils in this unit are—

Ora silt loam, 5 to 8 percent slopes, severely eroded.
Ora and Ruston soils, 5 to 8 percent slopes, severely eroded.

These soils can be tilled easily, but they tend to crust and pack when bare. They erode readily if they are not protected. The rate of infiltration is fairly slow. Permeability is moderate above the fragipan and slow in the fragipan. The available moisture-holding capacity is moderately low. The soils contain little organic matter.

A cover of plants or crop residues needs to be kept on these soils most of the time. This cover helps to protect the soils from further erosion, and it also reduces runoff. The supply of organic matter needs to be built up and maintained. The soils also require a complete fertilizer and lime to maintain fertility. A good supply of organic matter improves the structure of the soils, increases the rate of infiltration and moisture-holding capacity, and keeps the soils from crusting and packing.

These soils are better suited to sod than to row crops, but they can be used occasionally for row crops. Cotton, annual lespedeza, and small grain grow well, and the soils are fairly well suited to corn and soybeans. Pastures of bermudagrass, ryegrass, lespedeza, and crimson clover make good yields, but the soils are only fairly well suited to dallisgrass, white clover, and tall fescue. Pines and hardwoods grow well.

The following is an example of a suitable cropping system:

4 to 6 years of sod, followed by 1 year of row crops.

If these soils are used for cultivated crops, the rows need to be run on the contour and vegetated outlets provided. If it is feasible, terraces should be constructed.

CAPABILITY UNIT A7–IVw–1

Only one soil—Waverly silt loam—is in this capability unit. This nearly level, silty alluvial soil is poorly drained. It is on bottom lands and is subject to frequent overflow. The soil has a surface layer of silt loam and grayish upper layers. In most places the subsoil is a silt loam that is heavier textured than the surface layer, but in places it is silty clay loam.

Because this soil is wet, it is usually difficult to work, and it tends to form clods when plowed. The soil also crusts and packs when it is bare. A plowpan forms readily. The rate of infiltration is fairly slow, and permeability is slow. This soil is cold. It contains little organic matter and is low in fertility.

The supply of organic matter in the soil needs to be built up as high as feasible. A complete fertilizer and lime are required to maintain fertility. A good supply of organic matter improves the structure. Including sod and cover crops in the cropping system and managing the crop residues well will help to increase the supply of organic matter. The soil should be plowed and prepared for planting when it is not wet.

This soil is well suited to grasses and clovers. It can be used for row crops if it is adequately drained and properly managed. Soybeans, sorghum, oats, and similar crops make fair yields, but the soil is poorly suited to cotton and corn. Pastures of lespedeza and whiteclover grow well, but the soils are only fairly well suited to dallisgrass, bermudagrass, and bahiagrass. Hardwoods grow well on this soil.

The following are examples of suitable cropping systems:

3 years of grasses and legumes, followed by 1 year of row crops.
2 years of lespedeza, followed by 2 years of row crops.

If this soil is used for row crops or pasture, it needs a complete drainage system. The drainage system should include secondary ditches with V- or W-type ditches to remove the excess water. Row crops will need fertilizer and proper management of the crop residues.

CAPABILITY UNIT A7–IVw–2

This capability unit consists of nearly level, silty soils that are poorly drained. The soils are in upland depressions, on flats, or on stream terraces. They have a surface layer of silt loam. Their subsoil is mainly gray silt loam, but in places it is silty clay loam. A fragipan at a depth of about 14 to 18 inches retards the movement of roots, air, and moisture. The soils in this unit are—

Almo silt loam.
Henry silt loam.

These soils can be worked fairly easily, but they tend to crust and pack when bare. The rate of infiltration is slow. Permeability is moderate in the upper part of the subsoil and slow to very slow in the fragipan. The available moisture-holding capacity is limited because the fragipan is near the surface; roots cannot penetrate deep enough to get the necessary plant nutrients and water. These soils are cold and are poorly aerated. They contain little organic matter and are low in fertility. Because water moves very slowly through the fragipan, there are periods when the soils are too wet and periods when they are too dry.

These soils need drainage to remove the excess surface water. The supply of organic matter needs to be built up and maintained, and the soils need a complete fertilizer and lime to maintain fertility. A good supply of organic matter increases the rate of infiltration and the moisture-holding capacity. It also keeps the soils from crusting and packing. The supply of organic matter can be increased by including a sod crop in the cropping system and by managing the crop residues well.

These soils are well suited to grasses and legumes, but they can be used for special crops. Sweetpotatoes, sorghum, strawberries, and similar crops grow well, and cotton, corn, and soybeans make fair yields. The soils are well suited to pastures of bermudagrass and lespedeza and are fairly well suited to dallisgrass, Coastal bermudagrass, and whiteclover. Pines and hardwoods grow fairly well.

The following are examples of suitable cropping systems:

6 years of sod, followed by 2 years of sweetpotatoes.
4 years of sod, followed by 1 year of row crops.

If these soils are used for row crops, the rows need to be arranged properly. W-type ditches should be provided to remove the excess surface water.

CAPABILITY UNIT A3–VIe–1

This capability unit consists of deep, strongly sloping, well-drained soils that are slightly to moderately eroded. In most places the surface layer is loam, but in places it is sandy loam. The subsoil is loam or sandy clay loam. The soils in this unit are—

Ruston soils, 12 to 17 percent slopes.
Ruston soils, 12 to 17 percent slopes, eroded.

These soils have rapid runoff and erode readily. The rate of infiltration is moderate, and permeability is moderate to rapid. The available moisture-holding capacity varies, but it is generally adequate for trees and deep-rooted pasture plants. The soils contain little organic matter and are fairly low in fertility.

Because of the strong slopes and the severe hazard of erosion, these soils are not suitable for cultivation. They are better suited to trees than to pasture, but they can be used for pasture. If the areas are not overgrazed, bermudagrass, bahiagrass, crimson clover, and similar plants grow well, but the pasture plants require a complete fertilizer and lime. These soils are well suited to pines.

CAPABILITY UNIT A3–VIe–2

Only Ruston soils, 8 to 12 percent slopes, severely eroded, is in this capability unit. The soils are well drained. They are strongly sloping and are severely eroded; nearly all of the original surface layer has been lost through erosion. The present surface layer is mainly loam, but in places it is sandy clay loam. It consists chiefly of material from the upper part of the subsoil that has been mixed with remnants of the original surface layer.

These soils have rapid runoff and erode readily. They can be tilled fairly easily, but they crust and pack when bare. The rate of infiltration is fairly slow. Permeability is rapid, and the available moisture-holding capacity is low. The soils contain little organic matter and are low in natural fertility.

Because the hazard of erosion is very severe and the moisture-holding capacity is low, these soils are not suitable for cultivation, but they are well suited to trees and to sod crops. If a complete fertilizer and lime are used, pastures of bermudagrass, bahiagrass, crimson clover, and similar plants grow well. The soils are well suited to loblolly, shortleaf, and longleaf pines.

CAPABILITY UNIT A3–VIe–5

This capability unit consists of strongly sloping, moderately well drained to excessively drained soils that are moderately to severely eroded. The soils vary in texture. The underlying material is mainly gravelly sand, but in places it is clay. The soils in this unit are—

Guin and Boswell soils, 8 to 12 percent slopes, eroded.
Guin and Boswell soils, 8 to 12 percent slopes, severely eroded.

In this unit the hazard of erosion is very severe. The soils contain little organic matter and are low in fertility. The available moisture-holding capacity varies, but it is generally low.

These soils are not suitable for cultivation. Pastures of bermudagrass, bahiagrass, and crimson clover make fair yields if a complete fertilizer and lime are used and the soils are properly managed. Pines and hardwoods grow well on these soils.

CAPABILITY UNIT A3–VIs–1

Only Sandy alluvial land is in this capability unit. This soil is on bottom lands and consists of recent deposits of sandy alluvium that are nearly level and very droughty. It varies widely in texture and is generally stratified. In places the soil material is sand and silt, and in other places it is gravelly sand.

This soil contains little organic matter and is low in fertility. Infiltration and permeability are very rapid, except where the soil material consists of stratified silt and sand. Fertilizer leaches out rapidly.

This soil is well suited to trees, especially to pines and hardwoods. It is fairly well suited to common bermudagrass, bahiagrass, Coastal bermudagrass, and similar plants grown for pasture.

CAPABILITY UNIT A3–VIs–2

This capability unit consists of gravelly and sandy, gently sloping to strongly sloping soils that are droughty and slightly to moderately eroded. The uppermost 10 to 18 inches is gravelly sandy loam. Part of the subsoil is sandy, but 10 to 70 percent of it is quartz gravel. The soils in this unit are—

Guin gravelly sandy loam, 2 to 5 percent slopes.
Guin gravelly sandy loam, 5 to 8 percent slopes.
Guin gravelly sandy loam, 8 to 12 percent slopes.
Guin gravelly sandy loam, 8 to 12 percent slopes, eroded.

These soils contain little organic matter and are low in fertility. Their available moisture-holding capacity is low.

The less sloping areas, where slopes are between 2 and 8 percent, can be used occasionally for row crops, but the soils in these areas are difficult to manage. Their low moisture-holding capacity limits their productivity. All of the soils are well suited to pines, and they are also fairly well suited to bermudagrass, bahiagrass, and crimson clover grown for pasture. If the soils are used for pasture, they will need a complete fertilizer and lime.

CAPABILITY UNIT A7–VIIe–3

Only Gullied land is in this capability unit. Gullied land consists of moderately sloping to very steep areas that are very severely eroded and gullied. The texture in the upper part of the soil material varies widely, and that in the underlying material ranges from sand to clay.

Because runoff is rapid and the areas erode readily, erosion is a severe problem. The supply of organic matter is low and is difficult to build up.

Areas of this land need to be protected from further erosion by a well-managed permanent cover. Trees provide a suitable cover, and pines grow especially well. Areas that are wooded also need to be protected at all times from damage resulting from fire, grazing, and logging.

This land is not suited to cultivated crops. It is poorly suited to hay crops and pasture.

CAPABILITY UNIT A3–VIIe–1

This capability unit consists of steep to very steep, well-drained soils that are slightly to severely eroded. The soils are on uplands. In most places their surface layer is sandy loam, but in some places it is sandy clay loam. The subsoil is sandy clay loam or loam. The soils in this unit are—

Ruston soils, 12 to 17 percent slopes, severely eroded.
Ruston soils, 17 to 35 percent slopes.
Ruston soils, 17 to 35 percent slopes, eroded.
Ruston soils, 17 to 35 percent slopes, severely eroded.

These soils erode readily when bare. They have a moderate rate of infiltration, and permeability is rapid. The available moisture-holding capacity is low. The soils contain little organic matter and are low in fertility.

Because of the very severe hazard of erosion and low moisture-holding capacity, these soils are not suited to cultivated crops. They are poorly suited to hay crops and pasture, but trees, especially pines, grow well.

CAPABILITY UNIT A3–VIIe–4

This capability unit consists of steep to very steep, moderately well drained to excessively drained soils that are slightly to severely eroded. The soils are on uplands. They vary in texture—the underlying material ranges from gravelly sand to clay. The soils in this unit are—

Guin and Boswell soils, 12 to 17 percent slopes, eroded.
Guin and Boswell soils, 12 to 17 percent slopes, severely eroded.
Guin and Boswell soils, 17 to 40 percent slopes.
Guin and Boswell soils, 17 to 40 percent slopes, eroded.
Guin and Boswell soils, 17 to 40 percent slopes, severely eroded.

Because these soils erode readily when bare, they need to be protected by a well-managed permanent cover. Trees provide a suitable cover, and pines grow especially well. These soils are not well suited to cultivated crops, and they are poorly suited to hay crops and pasture.

CAPABILITY UNIT A3–VIIs–1

This capability unit consists of droughty, gravelly and sandy, steep to very steep soils that are slightly to moderately eroded. The soils are on uplands. The uppermost 10 to 18 inches is gravelly sandy loam. In most places the subsoil is dominantly sandy material, but 10 to 70 percent of it is quartz gravel. The soils in this unit are—

Guin gravelly sandy loam, 12 to 17 percent slopes.
Guin gravelly sandy loam, 12 to 17 percent slopes, eroded.
Guin gravelly sandy loam, 17 to 40 percent slopes.
Guin gravelly sandy loam, 17 to 40 percent slopes, eroded.

These soils are not suited to cultivated crops, and they are poorly suited to hay crops and pasture. They are probably best suited to pines.

Estimated Yields

Table 1 gives the estimated average acre yields of the principal crops grown on each of the soils in Lincoln County under two levels of management. In columns A are average yields based on management now prevalent in the county. In columns B are average yields obtained under a higher level of management than is commonly practiced in the county. The yields in columns A are generally 20 to 50 percent less than those in columns B.

The estimates are based on yields obtained in long-term experiments; on observations made during the course of the survey; and on information received from agronomists, technicians of the Soil Conservation Service, and the county agent, all of whom have had experience with the crops and soils of Lincoln County. Data for yields obtained on experimental plots were adjusted to reflect the combined effects of slope, weather, and levels of management. If such data were not available, estimates were made by using available data for similar soils.

All estimates are based on average rainfall in the area over a long period of time, and no irrigation. For alluvial soils, it is assumed that there is no hazard of overflow; hence, the effects of flooding on these soils must be considered locally. Estimates are not given if the soil is not commonly used for a specific crop or is not suited to that crop.

TABLE 1.—*Estimated average acre yields of the principal crops under two levels of management*

[Yields in columns A are obtained under a level of management now prevalent in the county; yields in columns B are obtained under a high level of management. Absence of a yield indicates crop is poorly suited to the soil and is seldom grown on it. Estimated yields are based on average rainfall over a long period of time, without irrigation]

Soil	Cotton (lint)		Corn		Oats		Hay		Permanent pasture	
	A	B	A	B	A	B	A	B	A	B
	Lb.	*Lb.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Tons*	*Tons*	*Acres per animal unit* [1]	*Acres per animal unit* [1]
Almo silt loam	----	----	15	40	15	25	1. 2	3. 0	5. 5	3. 0
Bude silt loam, 2 to 5 percent slopes, eroded	325	600	30	60	20	50	1. 0	3. 0	5. 0	3. 0
Bude silt loam, 0 to 2 percent slopes	325	600	35	75	25	55	1. 0	3. 5	5. 0	2. 5
Bude silt loam, 2 to 5 percent slopes	340	625	35	75	25	55	1. 0	3. 5	5. 0	2. 5
Bude silt loam, 2 to 5 percent slopes, severely eroded	225	400	15	40	15	30	. 5	2. 0	6. 5	3. 5
Bude silt loam, 5 to 8 percent slopes	340	625	30	60	20	50	1. 0	3. 5	5. 0	2. 5
Bude silt loam, 5 to 8 percent slopes, eroded	225	400	15	40	15	30	. 5	2. 0	6. 5	3. 5
Bude silt loam, 5 to 8 percent slopes, severely eroded	110	200	15	35	15	30	. 5	1. 5	7. 0	4. 0
Collins silt loam	380	725	40	90	30	65	1. 5	4. 0	4. 0	2. 0
Collins and Iuka soils	380	725	40	90	30	65	1. 5	4. 0	6. 0	3. 0
Dulac and Boswell soils, 5 to 8 percent slopes	300	525	35	60	25	50	1. 2	3. 0	5. 0	3. 0
Dulac and Boswell soils, 2 to 5 percent slopes	300	525	35	60	25	50	1. 2	3. 0	5. 0	3. 0
Dulac and Boswell soils, 2 to 5 percent slopes, eroded	275	500	30	55	25	50	1. 2	3. 0	5. 0	3. 0
Dulac and Boswell soils, 5 to 8 percent slopes, eroded	275	500	30	55	20	45	1. 2	3. 0	5. 0	3. 0
Dulac and Boswell soils, 5 to 8 percent slopes, severely eroded	200	300	20	35	15	35	. 5	1. 5	7. 0	4. 0
Falaya silt loam	375	650	40	85	20	55	1. 5	3. 5	4. 0	2. 0
Falaya silt loam, local alluvium	375	650	40	85	20	55	1. 5	3. 5	4. 0	2. 0
Guin gravelly sandy loam, 17 to 40 percent slopes	----	----	----	----	----	----	----	----	----	----
Guin gravelly sandy loam, 2 to 5 percent slopes	----	----	----	----	----	----	1. 0	2. 0	6. 0	3. 0
Guin gravelly sandy loam, 5 to 8 percent slopes	----	----	----	----	----	----	1. 0	2. 0	6. 0	3. 0
Guin gravelly sandy loam, 8 to 12 percent slopes	----	----	----	----	----	----	1. 0	2. 0	6. 0	3. 0
Guin gravelly sandy loam, 8 to 12 percent slopes, eroded	----	----	----	----	----	----	. 8	1. 5	6. 5	3. 5
Guin gravelly sandy loam, 12 to 17 percent slopes	----	----	----	----	----	----	. 5	1. 0	7. 0	4. 0
Guin gravelly sandy loam, 12 to 17 percent slopes, eroded	----	----	----	----	----	----	----	----	----	----
Guin gravelly sandy loam, 17 to 40 percent slopes, eroded	----	----	----	----	----	----	----	----	----	----
Guin and Boswell soils, 17 to 40 percent slopes	----	----	----	----	----	----	----	----	9. 0	4. 0
Guin and Boswell soils, 8 to 12 percent slopes, eroded	----	----	----	----	----	----	1. 0	2. 0	7. 0	3. 5
Guin and Boswell soils, 8 to 12 percent slopes, severely eroded	----	----	----	----	----	----	----	----	8. 0	4. 0
Guin and Boswell soils, 12 to 17 percent slopes, eroded	----	----	----	----	----	----	. 8	1. 5	7. 0	4. 0
Guin and Boswell soils, 12 to 17 percent slopes, severely eroded	----	----	----	----	----	----	----	----	----	----
Guin and Boswell soils, 17 to 40 percent slopes, eroded	----	----	----	----	----	----	----	----	9. 0	4. 0
Guin and Boswell soils, 17 to 40 percent slopes, severely eroded	----	----	----	----	----	----	----	----	----	----

See footnote at end of table.

TABLE 1.—*Estimated average acre yields of the principal crops under two levels of management*—Continued

Soil	Cotton (lint)		Corn		Oats		Hay		Permanent pasture	
	A	B	A	B	A	B	A	B	A	B
	Lb.	*Lb.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Tons*	*Tons*	*Acres per animal unit* [1]	*Acres per animal unit* [1]
Gullied land	------	------	------	------	------	------	------	------	9.0	5.0
Hatchie and Freeland silt loams, 0 to 2 percent slopes	275	600	35	75	25	50	1.0	3.5	5.0	2.5
Hatchie and Freeland silt loams, 2 to 5 percent slopes	300	625	35	75	25	50	1.0	3.5	5.0	2.5
Hatchie and Freeland silt loams, 2 to 5 percent slopes, eroded	275	600	30	70	20	45	1.0	3.0	5.5	3.0
Henry silt loam	------	------	15	40	15	25	1.2	3.0	------	------
Ora silt loam, 2 to 5 percent slopes, eroded	300	600	30	70	20	50	.8	2.8	6.0	3.0
Ora silt loam, 2 to 5 percent slopes	325	625	35	75	25	55	1.0	3.0	5.0	3.5
Ora silt loam, 2 to 5 percent slopes, severely eroded	300	575	20	50	15	30	.5	2.0	7.0	3.5
Ora silt loam, 5 to 8 percent slopes	325	600	35	75	25	55	1.0	3.0	5.0	2.5
Ora silt loam, 5 to 8 percent slopes, eroded	275	550	30	70	20	45	.8	2.8	6.0	3.0
Ora silt loam, 5 to 8 percent slopes, severely eroded	150	300	20	50	15	25	.5	2.0	7.0	3.5
Ora and Ruston soils, 5 to 8 percent slopes, eroded	275	550	30	70	20	50	.8	2.8	6.0	3.0
Ora and Ruston soils, 2 to 5 percent slopes, eroded	350	625	35	75	25	55	1.0	3.0	5.0	2.5
Ora and Ruston soils, 5 to 8 percent slopes	300	600	35	75	20	55	1.0	3.0	6.0	3.0
Ora and Ruston soils, 5 to 8 percent slopes, severely eroded	200	450	20	50	15	40	.5	2.0	7.0	3.5
Pheba silt loam, 2 to 5 percent slopes, eroded	200	500	30	60	25	55	1.0	3.5	5.0	2.5
Pheba silt loam, 2 to 5 percent slopes	250	550	35	65	25	55	1.0	3.5	5.0	2.5
Providence silt loam, 2 to 5 percent slopes, eroded	400	650	25	70	25	60	1.0	3.5	5.0	2.0
Providence silt loam, 2 to 5 percent slopes	400	650	30	75	25	60	1.0	3.5	5.0	2.0
Providence silt loam, 2 to 5 percent slopes, severely eroded	275	500	15	50	15	45	1.0	3.5	5.0	2.0
Providence silt loam, 5 to 8 percent slopes	350	600	20	70	25	50	.5	2.0	5.5	2.5
Providence silt loam, 5 to 8 percent slopes, eroded	350	600	20	65	20	50	.8	3.0	5.0	2.0
Providence silt loam, 5 to 8 percent slopes, severely eroded	275	500	15	40	15	35	.5	2.0	7.0	3.5
Providence silt loam, 8 to 12 percent slopes, eroded	250	450	15	40	20	20	.8	2.8	6.5	3.0
Providence silt loam, 8 to 12 percent slopes, severely eroded	200	375	10	25	15	30	.5	1.5	8.0	4.0
Ruston soils, 12 to 17 percent slopes	------	------	------	------	------	------	.5	1.5	6.5	3.5
Ruston soils, 8 to 12 percent slopes	300	500	15	50	15	40	.8	2.0	6.0	3.0
Ruston soils, 8 to 12 percent slopes, eroded	275	475	15	50	10	35	.8	2.0	6.0	3.0
Ruston soils, 8 to 12 percent slopes, severely eroded	------	------	------	------	------	------	.5	1.0	7.0	4.0
Ruston soils, 12 to 17 percent slopes, eroded	------	------	------	------	------	------	.5	1.5	6.5	3.5
Ruston soils, 12 to 17 percent slopes, severely eroded	------	------	------	------	------	------	------	------	------	------
Ruston soils, 17 to 35 percent slopes	------	------	------	------	------	------	------	------	------	------
Ruston soils, 17 to 35 percent slopes, eroded	------	------	------	------	------	------	------	------	------	------
Ruston soils, 17 to 35 percent slopes, severely eroded	------	------	------	------	------	------	------	------	------	------
Sandy alluvial land	------	------	------	------	------	------	.5	1.5	8.0	4.5
Waverly silt loam	------	------	15	50	15	25	1.2	3.0	5.0	2.5

[1] Average number of acres required to furnish adequate grazing, without injury to the pasture, for 1 animal unit for a grazing season of 365 days. An animal unit is equivalent to 1 cow, steer, or mule; 5 hogs; or 7 sheep.

Under the management used to obtain the yields given in columns A, part of the practices listed for the high level of management are used. The operator, however, fails to use two or more of the practices suggested for the high level of management. For example, he may prepare the seedbed adequately and cultivate the crop properly but fail to use the right kind and amount of fertilizer. Also, he may not use practices to control insects. As a result, the yields he obtains are lower than those obtained where practices suggested for a high level of management are used.

To obtain the yields shown in columns B, the following management practices, applicable to all of the crops grown, were used:

1. Applying lime and fertilizer in the amounts indicated by soil tests and field trials.
2. Growing varieties of crops that make high yields and that are suited to the area.
3. Preparing the seedbed adequately.
4. Using suitable methods to plant or seed the crop, and planting the crop at a suitable rate and at the right time.
5. Inoculating legumes.
6. Practicing shallow cultivation of row crops.
7. Controlling weeds, insects, and diseases.
8. Using cropping systems, such as those suggested in the section "Management by Capability Units," to help protect the soils from erosion.
9. Where needed, establishing grassed waterways, tilling on the contour, constructing terraces, and draining the soils.
10. Protecting the soils from overgrazing.

In addition to the practices applicable to all the crops grown, the defined systems of management used to obtain the yields given in table 1 also include the following specific practices for each of the principal crops grown in the county.

Cotton.—For cotton, the practices on which the estimated yields are based are—

1. Under the level of management needed to obtain the yields shown in columns B, 60 to 90 pounds of nitrogen per acre is applied and 33 pounds of nitrogen per acre is used as a side dressing. In addition, 80 to 120 pounds of phosphate and 60 to 90 pounds of potash per acre are added. All applicable practices suggested for growing crops under a high level of management are used.
2. For the yields obtained under columns A, the operator has applied part of the practices suggested under the high level of management, but he failed to apply one or more of these practices, or he did not apply the suggested practices well.

Corn.—For corn, the practices on which the estimated yields are based are—

1. Under the level of management needed to obtain the yields shown in columns B, 90 to 120 pounds of nitrogen, 49 to 90 pounds of phosphate, and 48 to 90 pounds of potash per acre are added; in addition, 16 to 30 pounds of nitrogen per acre is added when the corn is knee high. Also, the crop is seeded at the rate of 10,000 to 12,000 plants per acre, and all applicable practices suggested for growing crops under a high level of management are used.
2. For the yields obtained under columns A, the operator applies only 12 to 24 pounds of nitrogen, 12 to 24 pounds of phosphate, and 12 to 24 pounds of potash per acre, and adds 10 to 15 pounds of nitrogen per acre as a side dressing. Corn is planted at the rate of 4,000 to 8,000 plants per acre, and there may be skips in the rows. In addition, corn from the crib may be used for planting, the crop may be planted late, and cultivation may be neglected.

Oats.—For oats, the practices on which the estimated yields are based are—

1. Under the level of management needed to obtain the yields shown in columns B, oats are seeded in September on a seedbed that has been left fallow, and 60 pounds of nitrogen, 100 pounds of phosphate, and 60 pounds of potash per acre are added. The soil is limed so that it has a pH of 6.0 when tested. The oats are grazed, but grazing is controlled. Usually, in December or January, 33 pounds of nitrogen per acre is added as a topdressing. The cattle are removed from the field from March 1 to March 15, and an additional 33 pounds of nitrogen per acre is added as a topdressing.
2. For the yields obtained in columns A, the operator has applied part of the practices suggested under the high level of management, but he failed to apply one or more of the practices. For example, he did not use the kinds and amounts of fertilizer and lime recommended. Also, he may have planted the crop late, failed to use varieties of crops that resist disease and that were suited to the soil, or he failed to control grazing.

As a rule, oats are grazed until about March 1. They are then grown for grain, or they may be cut for hay. A short method of approximating the yield of the oat crop as hay is to divide the number of bushels of oats by 31. The result will be the approximate yield of hay in tons.

Hay crops and permanent pasture.—Hay crops and permanent pasture are discussed together because the general practice in the county is to cut hay from the surplus grasses in a permanent pasture; therefore, the two levels of management will apply equally well to both crops. For hay crops and permanent pasture, the practices on which the estimated yields are based are—

1. Under the level of management used to obtain the yields of forage given in columns B, the pasture or hay crop is fertilized annually. Grasses receive 60 to 90 pounds of nitrogen, phosphate, and potash per acre according to the results of soil tests. For legumes, the soils are limed to a pH of 6.5 and phosphate and potash are applied according to the results of soil tests. In addition, if mowing is needed, the areas are clipped two or three times annually and are sprayed to control weeds. The pastures are fenced so that grazing can be regulated. The pastures and areas from which hay crops are harvested are renovated and reseeded when necessary.
2. For the yields obtained under columns A, pastures and hay crops are fertilized infrequently, possibly only as often as once every 3 to 4 years; legumes receive some lime, phosphate, and potash; the pastures are clipped or sprayed occasionally to help control weeds, but no well-defined system of managing grazing is practiced. Pastures and areas where hay crops are grown are renovated and reseeded infrequently. Occasionally, the soils are tested.

Uses of Soils for Growing Wood Crops

Most of Lincoln County was once covered by stands of pines and hardwoods. Longleaf pines generally grew on the ridges and on sites that were fairly dry. Loblolly and shortleaf pines grew on the middle and lower parts of the slopes. Pure stands of loblolly pines also grew on terraces and on moist sites along streams. White, red, blackjack, and pin oaks, sweetgum, blackgum, poplar, magnolia, maple, and other valuable bottom-land hardwoods grew along the Bogue Chitto and Homochitto Rivers and their larger tributaries.

Some cutting of the woodlands took place about 1858, but large-scale woodland cutting operations were not begun until the early 1900's. Cutting has been extensive in recent years. In 1956, for example, a total of 9.4 million cubic feet of growing stock and 31.7 million board feet of sawtimber was cut. A total of 52,500 standard cords of pulpwood was cut in 1958 (*7*).[2]

[2] Italic numbers in parentheses refer to Literature Cited, p. 64.

Woodlands now occupy about 63 percent of the land area in the county. In 1957, there was a total of 112.1 million cubic feet of growing stock in the county and 418.5 million board feet of sawtimber. Of this, 54.2 million cubic feet of growing stock and 245.8 million board feet of sawtimber was softwoods; the rest was hardwoods (*7*). There are numerous species of trees, but the stands consist mainly of longleaf, loblolly, and shortleaf pines, oak, hickory, gum, cypress, elm, ash, and cottonwood. About 90 percent of the wooded acreage in the county is in small tracts that are privately owned, and about 8 percent is owned by industries that manufacture wood products. The remaining 2 percent is in the Homochitto National Forest.

The soils of the county vary greatly in their suitability for trees. Differences in the soils cause differences in the rate at which the trees grow. This is indicated by different site index ratings for the various species grown on different soils. Differences in the soils also cause differences in the regeneration potential of a given species; in the degree of competition from undesirable plants, which determines whether brush and other undesirable vegetation will encroach; in the trafficability or limitations on use of equipment; in the hazards of windthrow and erosion; and in the species priority, or kind of trees, that grow best on a given site.

Major forest types

Five major forest types occur in Lincoln County (*3*, *7*). These are (A) loblolly-shortleaf pine, (Aa) oak-pine, (B) oak-hickory, (C) longleaf-slash pine, and (D) bottom-land hardwoods. The trees of the loblolly-shortleaf pine, oak-pine, and longleaf-slash pine types are softwoods. The oak-hickory type consists mainly of upland hardwoods. The bottom-land hardwoods consist of two distinct subtypes: Elm-ash-cottonwood and oak-gum-cypress.

In 1957, the loblolly-shortleaf pine type occupied about 110,700 acres in the county, and the oak-pine and longleaf-slash pine types, each occupied about 13,000 acres. Of the hardwoods, the oak-hickory type occupied about 58,600 acres, and bottom-land hardwoods—the oak-gum-cypress and the elm-ash-cottonwood subtypes—occupied about 39,100 acres. Figure 5 shows the approximate location of each major forest type in the county.

LOBLOLLY-SHORTLEAF PINE

This major forest type is made up mainly of loblolly pine and shortleaf pine, but it may include spruce pine. It does not include longleaf or slash pine. Where the loblolly-shortleaf pine type predominates (fig. 6), 50 percent or more of the stand consists of loblolly pine and shortleaf pine, but spruce pine grows in a few places on wet sites.

The loblolly-shortleaf pine forest type is mainly on the Providence-Bude soil association, but it is also on the Providence-Guin-Boswell-Ruston, Guin-Boswell-Dulac, and Ora-Ruston-Bude soil associations. The soils on which this forest type occurs formed in different kinds of material. The soils of the Providence-Bude soil association, for example, formed in a thin layer of loess over coastal plain material. Those of the Guin-Boswell-Dulac soil association formed in coastal plain gravelly sandy loams.

OAK-PINE

This major forest type consists mainly of upland oaks, but loblolly and shortleaf pines make up 25 to 49 percent of the stand. Common associates include gum, hickory, and yellow-poplar.

The oak-pine type occurs on the Providence-Bude soil association. The soils of this association are mainly on uplands. They formed in a thin layer of loess over coastal plain material.

OAK-HICKORY

This major forest type is in forests where 50 percent or more of the stand consists of upland oaks or hickory, or of both species, and the rest of the stand is mainly other hardwoods. Where 50 percent or more of the stand consists of upland oaks or hickory and 25 to 49 percent is pine, the stand is classified as oak-pine rather than oak-hickory. Cover types associated with the oak-hickory type are the shortleaf pine-oak and the loblolly pine-hardwood.

The oak-hickory forest type is on the Guin-Boswell-Dulac and Ora-Ruston-Bude soil associations. It is mainly on soils of uplands that formed in coastal plain material.

LONGLEAF-SLASH PINE

This major forest type is recognized in forests where 50 percent or more of the stand consists of longleaf pine or slash pine. Native stands of slash pine are unknown in Lincoln County, but this species has been planted extensively. Cover types associated with the longleaf-slash pine type are the longleaf pine and longleaf pine-scrub oak.

The longleaf-slash pine forest type is on the Ora-Ruston-Bude soil association. The soils of this association are mainly on uplands and formed in coastal plain material.

BOTTOM-LAND HARDWOODS

This major forest type consists of two distinct subtypes; namely, the oak-gum-cypress and the elm-ash-cottonwood. The oak-gum-cypress subtype is in forests on bottom lands. In these forests 50 percent or more of the stand consists of tupelo-gum, blackgum, sweetgum, oak, or southern cypress, which grow singly or in combination. Where 25 to 49 percent of the stand is pine, the cover type is classified as oak-pine rather than oak-gum-cypress.

The elm-ash-cottonwood subtype is in forests where 50 percent or more of the stand consists of elm, ash, or cottonwood, growing singly or in combination. Associated with it is the beech-southern magnolia cover type. The bottom-land hardwood type is generally on the Falaya-Waverly-Collins soil association. The soils of this association are on flood plains and are moderately well drained to poorly drained. They have formed in silty alluvium and have a surface layer of silt loam. In general, the trees that grow on the Falaya-Waverly-Collins soil association are hardwoods, but some pines, mainly loblolly, grow on the soils of this association.

Woodland suitability groupings

The forester, landowner, or agricultural worker who plans management for woodland must know his soils and the kinds of trees that will grow best on them. He must also know the approximate rate of growth, the volume he can expect to harvest, and the hazards that will be encountered in planting and harvesting the trees. In addition, he needs to know the site index (the average height of the dominant and codominant trees at 50 years of age) of the important species. The descriptions of the soils given in the soil survey report and the map at the back of the report will give him much of the information he needs.

Determining the site index for a selected species of tree on a specific soil is especially important. The suitability of a soil for any crop depends largely upon whether that particular crop will grow in a quantity

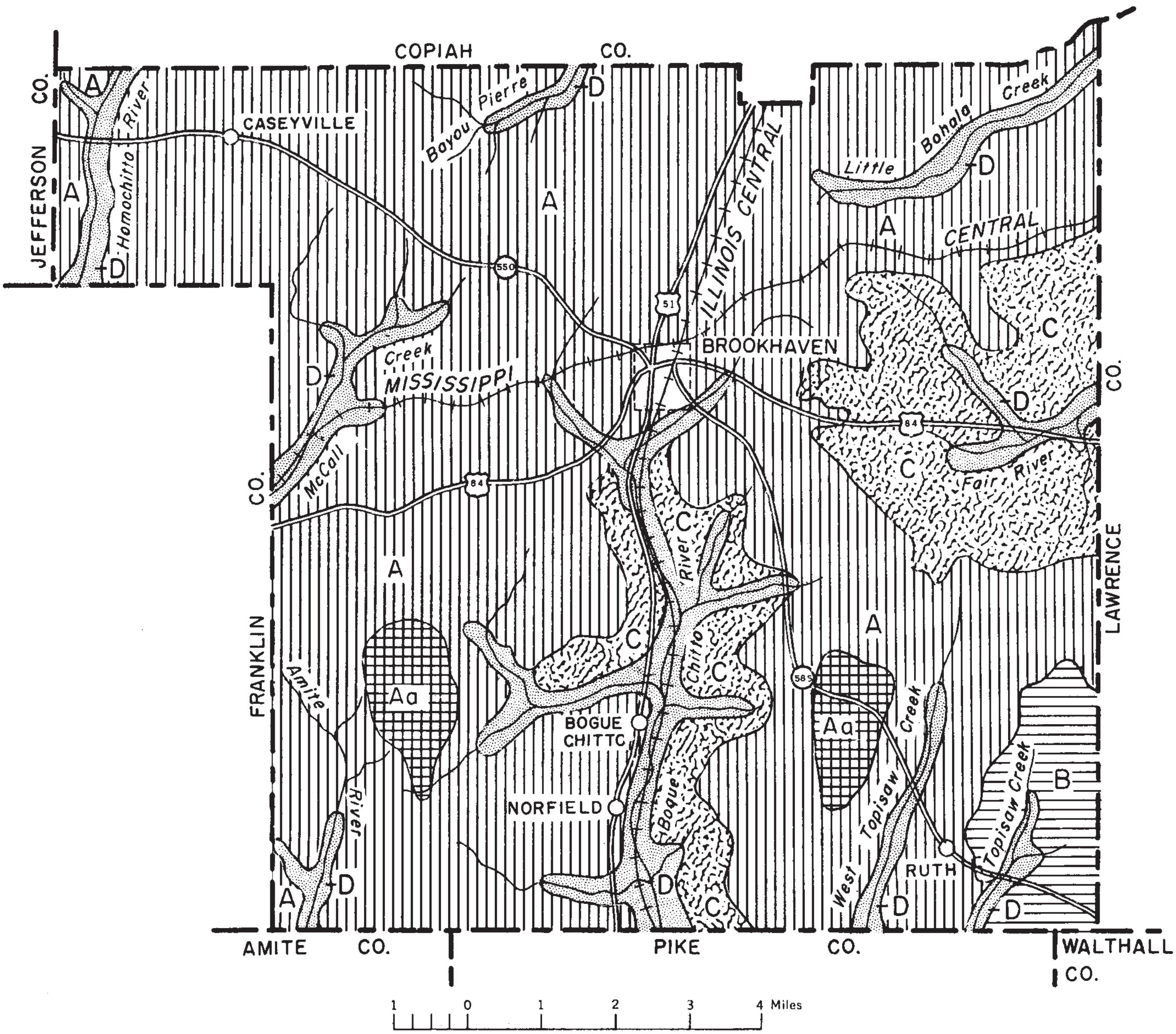

Figure 5.—Major forest types in Lincoln County.

A—Loblolly-shortleaf pine.
Other associated cover types are loblolly pine and loblolly pine-hardwood.
Providence-Bude; Providence-Guin-Boswell-Ruston; Guin-Boswell-Dulac; and Ora-Ruston-Bude soil associations.

Aa—Oak-pine.
Other associated cover type is loblolly pine-hardwood.
Providence-Bude soil association.

B—Oak-hickory.
Other associated cover types are shortleaf pine-oak and loblolly pine-hardwood.
Guin-Boswell-Dulac; and Ora-Ruston-Bude soil associations.

C—Longleaf-slash pine.
Other associated cover types are longleaf pine and longleaf pine-scrub oak.
Ora-Ruston-Bude soil association.

D—Bottom-land hardwoods.
Oak-gum-cypress and elm-ash-cottonwood.
The associated cover type is beech-southern magnolia.
Falaya-Waverly-Collins soil association.

Figure 6.—**Trees of the loblolly-shortleaf pine forest type.**

and of such quality as to be worthwhile in relation to the input. This is particularly true of wood crops because of the time required for the crop to mature, the quantity of growing stock required for full production, and the large investment in inventory.

To assist owners of woodland and others interested in planning the management of woodland, the soils of the county have been placed in eight woodland suitability groups. Each group is made up of soils that require the use of similar kinds of conservation practices and other management and that have comparable potential productivity. Such a grouping helps the forester, agricultural worker, or owner of the land plan the best use and management of a tract of woodland. It helps him determine when the first thinning will be needed, the proper cutting cycle to use for a given spacing, and the adversities he is likely to encounter in logging.

In table 2 the site indexes are given for loblolly pine, shortleaf pine, and longleaf pine, and the woodland groups are rated according to their capabilities, limitations, and the hazards likely to be encountered. The site indexes were based on studies made in Lincoln, Amite, Franklin, and Pike Counties. The following is an explanation of the terms used in table 2.

TABLE 2.—*Estimated woodland suitability groupings of soils*

[Determinations are from studies made in Lincoln, Amite, Franklin, and Pike Counties. All of these counties have from 30 to 32 inches of rainfall during the period March 1 through August 31]

Groups, soils, and mapping symbols [1]	Site index [2]			Degree of plant competition	Equipment limitations	Seedling mortality from planting	Windthrow hazard	Erosion hazard
	Loblolly pine	Shortleaf pine	Longleaf pine					
Group 1 Almo silt loam (Am). Henry silt loam (Hs).	91±5 [3]	[4]	[4]	Severe	Moderate to severe.	Moderate	Moderate	Slight.
Group 2 Bude silt loam (BuA, BuB, BuB2, BuB3, BuC, BuC2, BuC3). Hatchie and Freeland silt loams (HfA, HfB, HfB2). Pheba silt loam (PhB, PhB2).	87±8	72±3	74±6	Moderate	Moderate	Moderate	Slight to moderate.	Moderate.
Group 3 Collins silt loam (Co). Collins and Iuka soils (Cs).	104±3	88 [3]	71 [3]	Severe	Moderate to severe.	Moderate	Slight to moderate.	Slight.
Group 4 Dulac and Boswell soils (DbB, DbB2, DbC, DbC2, DbC3). Ora silt loam (OaB, OaB2, OaB3, OaC, OaC2, OaC3). Ora and Ruston soils (OrB2, OrC, OrC2, OrC3). Providence silt loam (PrB, PrB2, PrB3, PrC, PrC2, PrC3, PrD2, PrD3).	88±2	76±2	74±4	Moderate	Slight to moderate.	Slight to moderate.	Slight to moderate.	Moderate to very severe.

See footnotes at end of table.

TABLE 2.—*Estimated woodland suitability groupings of soils*—Continued

Groups, soils, and mapping symbols [1]	Site index [2]			Degree of plant competition	Equipment limitations	Seedling mortality from planting	Windthrow hazard	Erosion hazard
	Loblolly pine	Shortleaf pine	Longleaf pine					
Group 5 Falaya silt loam (Fa). Falaya silt loam, local alluvium (Fm).	105±1	(4)	(4)	Severe	Moderate to severe.	Moderate	Moderate	Slight.
Group 6 Guin gravelly sandy loam (GgB, GgC, GgD, GgD2, GgE, GgE2, GgF, GgF2). Guin and Boswell soils (GbD2, GbD3, GbE2, GbE3, GbF, GbF2, GbF3).	90±3	75 [3]	56 [3]	Slight	Slight to severe.	Moderate	Slight to moderate.	Moderate to very severe.
Group 7 Ruston soils (RuD, RuD2, RuD3, RuE, RuE2, RuE3, RuF, RuF2, RuF3).	86±5	78±6	75±5	Slight	Slight to moderate.	Slight	Slight	Moderate to very severe.
Group 8 Waverly silt loam (Wa).	80 [3]	(4)	(4)	Severe	Moderate to severe.	Moderate to severe.	Moderate	Slight.

[1] For descriptions of the soils, see the section "Descriptions of Soils."
[2] The plus or minus figure shows standard deviation.
[3] Less than five sites measured.
[4] Species indicated generally do not grow on these soils, and adequate stands were not found so that the site index could be measured.

The expected hazard from competition by other plants is rated as *slight*, *moderate*, and *severe*. A rating of slight means that competition from undesirable plants is no special problem. A rating of moderate means that the undesirable plants (invaders) delay, but do not prevent, the establishment of a normal, fully stocked stand. The seedbed generally does not require special preparation, and simple methods can be used to prevent undesirable plants from invading. A rating of severe means that competition from other plants prevents trees from restocking naturally. Where competition from other plants is severe, the site needs to be prepared carefully, and management needs to include practices, such as controlled burning, girdling, and spraying the undesirable plants with chemicals.

Equipment limitations—the characteristics of the soil that restrict or prohibit the use of equipment commonly used in tending and harvesting the trees—are also rated according to the terms *slight*, *moderate*, and *severe*. By slight is meant there is no restriction in the kind of equipment or in the time of year it is used. By moderate is meant that slopes are moderately steep, or that there is a restriction in the use of heavy equipment because the soils are wet in winter and early in spring. Further, in some areas erosion has exposed firm, clayey soil material that was formerly part of the subsoil, and this material is excessively wet. By severe is meant that the soils are moderately steep to steep, have outcrops of stone or rock, or are wet in winter or early in spring because they are on bottom lands or low terraces.

Seedling mortality refers to the failure of seedlings to grow in a normal environment after adequate natural seeding has taken place or after suitable seedlings have been planted. It is affected by the kinds of soils and by other factors in the environment. The ratings given for seedling mortality are *slight*, *moderate*, and *severe*. A rating of slight means that trees ordinarily regenerate naturally in areas where there are sufficient seeds, or that no more than 25 percent of the seedlings that are planted die. A rating of moderate means that trees do not regenerate naturally in large enough numbers to restock adequately, or that 25 to 50 percent of the seedlings that are planted die. In some places replanting will be necessary to fill open spaces. A rating of severe means that trees ordinarily do not reseed naturally in the areas, even where there are enough seeds, and more than 50 percent of the seedlings that are planted die. Where mortality of seedlings is severe, seedlings need to be planted where the seeds do not grow, a special seedbed should be prepared, and good methods of planting need to be used to assure a full stand of trees.

The hazard of windthrow depends on the development of roots and on the ability of the soils to hold trees firmly in the soil. If the hazard is rated as *slight*, the trees are firmly rooted and will not fall over in a normal wind. If it is rated as *moderate*, the roots are large enough to hold the trees firmly, except when the soil is excessively wet and the wind is strong. The hazard of windthrow is *severe* if the roots do not provide enough stability to prevent the trees from blowing over when they are not protected by other trees.

The hazard of erosion is rated according to the potential hazard of erosion when the soil is managed according to currently acceptable standards. It is rated as *slight* if only a slight loss of soil is expected. Generally, there is only a slight hazard of erosion if the slope is no more than 2 percent and runoff is slow or very slow. The hazard of erosion is rated as *moderate* where there would be a moderate loss of soil if runoff is not controlled and the cover of plants is not adequate to protect the soils. It is *severe* where steep slopes, rapid runoff, slow infiltration and permeability, and past erosion make the soil susceptible to severe erosion.

WOODLAND SUITABILITY GROUP 1

In this group are nearly level, poorly drained, silty soils that have a fragipan at a depth of about 10 to 16 inches. The soils have a fluctuating water table and are wet during rainy seasons and dry during dry seasons. The following soils are in this group:

Almo silt loam.
Henry silt loam.

Shortleaf and longleaf pines usually do not grow on these soils, but loblolly pine grows in a few places. Its site index is about 91 feet. Based on tables of normal yields, a 50-year-old, fully stocked, unmanaged stand of loblolly pine yields about 343 board feet per acre (Doyle rule) annually.

Competition from undesirable species is severe on the soils of this group. Hardwoods are better suited to the soils than other species. Planted loblolly pine is subject to extreme competition from hardwoods. Special preparation of the site and subsequent control of competing hardwoods are necessary if loblolly pine is to be grown.

Heavy logging equipment cannot be used on these soils during periods when moisture is excessive. Such periods usually occur late in winter and early in spring. Normally, the soils are not wet for more than 3 to 6 months during the year.

If the velocity of the wind is high, there is a moderate hazard of windthrow during periods when the soils are excessively wet. Because the soils have slopes of less than 2 percent, the hazard of erosion is slight.

WOODLAND SUITABILITY GROUP 2

In this group are somewhat poorly drained, silty soils that have a fragipan at a depth of about 12 to 17 inches. In most of the areas, the available moisture-holding capacity is limited because the fragipan is too near the surface; roots cannot penetrate deep enough to get the necessary plant nutrients and water. These soils are on uplands and on the terraces along streams. They have slopes of 0 to 8 percent. The following soils are in this group:

Bude silt loam, 0 to 2 percent slopes.
Bude silt loam, 2 to 5 percent slopes.
Bude silt loam, 2 to 5 percent slopes, eroded.
Bude silt loam, 2 to 5 percent slopes, severely eroded.
Bude silt loam, 5 to 8 percent slopes.
Bude silt loam, 5 to 8 percent slopes, eroded.
Bude silt loam, 5 to 8 percent slopes, severely eroded.
Hatchie and Freeland silt loam, 0 to 2 percent slopes.
Hatchie and Freeland silt loams, 2 to 5 percent slopes.
Hatchie and Freeland silt loams, 2 to 5 percent slopes, eroded.
Pheba silt loam, 2 to 5 percent slopes.
Pheba silt loam, 2 to 5 percent slopes, eroded.

The site index for loblolly pine on the soils of this group is about 15 feet higher than the site index for shortleaf pine and 13 feet higher than the site index for longleaf pine. Based on tables of normal yields, 50-year-old, fully stocked, unmanaged stands of loblolly pine yield about 300 board feet per acre (Doyle rule) annually. A 50-year-old, fully stocked, unmanaged stand of shortleaf pine yields about 193 board feet per acre annually, and one of longleaf pine, about 114 board feet per acre annually.

Competition from undesirable species is moderate on these soils. It does not prevent the designated species from becoming established, but it may delay the establishment of a normal, fully stocked stand and retard the initial growth of the trees. Preparation of the site is not needed, but simple management practices will help to obtain a satisfactory stand.

Limitations on the use of equipment are moderate. Because the soils are somewhat poorly drained, however, there is a seasonal restriction on the use of equipment during periods when rainfall has been heavy. On slopes of 5 to 8 percent, landings, skid trails, and roads through the woods need to be stabilized, and simple practices are needed to maintain them.

These soils are medium textured. The hazard of erosion is moderate.

WOODLAND SUITABILITY GROUP 3

In this group are nearly level, friable, medium-textured soils that are moderately well drained. The soils are on flood plains and are subject to overflow. They have a thick root zone and high available moisture-holding capacity. The following soils are in this group:

Collins silt loam.
Collins and Iuka soils.

The site index for loblolly pine on the soils of this group is about 16 feet higher than the site index for shortleaf pine and 33 feet higher than the site index for longleaf pine. Based on tables of normal yields, a 50-year-old, fully stocked, unmanaged stand of loblolly pine yields about 512 board feet per acre (Doyle rule) annually. A 50-year-old, fully stocked, unmanaged stand of shortleaf pine yields about 381 board feet per acre annually, and one of longleaf pine, about 96 board feet per acre annually.

Competition from undesirable species, limitations on the use of equipment, and the hazards of windthrow and erosion are essentially the same for the soils of this group as for the soils of woodland suitability group 1.

WOODLAND SUITABILITY GROUP 4

In this group are chiefly moderately well drained, medium-textured soils of uplands that have a fragipan at a depth of about 20 to 24 inches. The Boswell and Ruston soils, which occupy only a small acreage, lack a fragipan, but the Boswell soils have a slowly permeable, clayey subsoil. The slope ranges from 2 to 12 percent. The following soils are in this group:

Dulac and Boswell soils, 2 to 5 percent slopes.
Dulac and Boswell soils, 2 to 5 percent slopes, eroded.
Dulac and Boswell soils, 5 to 8 percent slopes.
Dulac and Boswell soils, 5 to 8 percent slopes, eroded.
Dulac and Boswell soils, 5 to 8 percent slopes, severely eroded.
Ora silt loam, 2 to 5 percent slopes.
Ora silt loam, 2 to 5 percent slopes, eroded.
Ora silt loam, 2 to 5 percent slopes, severely eroded.
Ora silt loam, 5 to 8 percent slopes.
Ora silt loam, 5 to 8 percent slopes, eroded.
Ora silt loam, 5 to 8 percent slopes, severely eroded.
Ora and Ruston soils, 2 to 5 percent slopes, eroded.
Ora and Ruston soils, 5 to 8 percent slopes.
Ora and Ruston soils, 5 to 8 percent slopes, eroded.
Ora and Ruston soils, 5 to 8 percent slopes, severely eroded.

Providence silt loam, 2 to 5 percent slopes.
Providence silt loam, 2 to 5 percent slopes, eroded.
Providence silt loam, 2 to 5 percent slopes, severely eroded.
Providence silt loam, 5 to 8 percent slopes.
Providence silt loam, 5 to 8 percent slopes, eroded.
Providence silt loam, 5 to 8 percent slopes, severely eroded.
Providence silt loam, 8 to 12 percent slopes, eroded.
Providence silt loam, 8 to 12 percent slopes, severely eroded.

The site index for loblolly pine on the soils of this group is about 12 feet higher than for shortleaf pine and 14 feet higher than for longleaf pine. Based on tables of normal yields, a 50-year-old, fully stocked, unmanaged stand of loblolly pine yields about 310 board feet per acre (Doyle rule) annually. A 50-year-old, fully stocked, unmanaged stand of shortleaf pine yields about 232 board feet per acre annually, and one of longleaf pine, about 114 board feet per acre annually.

Competition from undesirable species and limitations on the use of equipment for these soils are the same as for the soils of woodland suitability group 2. The hazard of erosion is moderate where the slopes are from 3 to 8 percent and severe to very severe where they are greater than 8 percent.

WOODLAND SUITABILITY GROUP 5

In this group are nearly level, friable, silty soils that are somewhat poorly drained. The soils are on flood plains and on small areas of bottom lands along the upper reaches of the smaller drains. The following soils are in this group:

Falaya silt loam.
Falaya silt loam, local alluvium.

Shortleaf and longleaf pines usually do not grow on these soils; the site index for loblolly pine is about 105. Based on tables of normal yields, a 50-year-old, fully stocked, unmanaged stand of loblolly pine yields about 525 board feet per acre (Doyle rule) annually.

Competition from undesirable species, limitation on the use of equipment, and the hazard of windthrow and erosion for these soils are essentially the same as for the soils of woodland suitability group 1.

WOODLAND SUITABILITY GROUP 6

In this group are well-drained to excessively drained, gravelly and sandy soils and moderately well drained, medium-textured soils that have a slowly permeable, clayey subsoil. The available moisture-supplying capacity varies, but in most places it is low. These soils are on uplands and have slopes of 2 to 40 percent. The following soils are in this group:

Guin gravelly sandy loam, 2 to 5 percent slopes.
Guin gravelly sandy loam, 5 to 8 percent slopes.
Guin gravelly sandy loam, 8 to 12 percent slopes.
Guin gravelly sandy loam, 8 to 12 percent slopes, eroded.
Guin gravelly sandy loam, 12 to 17 percent slopes.
Guin gravelly sandy loam, 12 to 17 percent slopes, eroded.
Guin gravelly sandy loam, 17 to 40 percent slopes.
Guin gravelly sandy loam, 17 to 40 percent slopes, eroded.
Guin and Boswell soils, 8 to 12 percent slopes, eroded.
Guin and Boswell soils, 8 to 12 percent slopes, severely eroded.
Guin and Boswell soils, 12 to 17 percent slopes, eroded.
Guin and Boswell soils, 12 to 17 percent slopes, severely eroded.
Guin and Boswell soils, 17 to 40 percent slopes.
Guin and Boswell soils, 17 to 40 percent slopes, eroded.
Guin and Boswell soils, 17 to 40 percent slopes, severely eroded.

The site index for loblolly pine on the soils of this group is about 15 feet higher than for shortleaf pine and 34 feet higher than for longleaf pine. On the soils of this group, shortleaf and longleaf pines were observed at less than five sites, however, so the information about those two species may not be accurate. Based on tables of normal yields, a 50-year-old, fully stocked, unmanaged stand of loblolly pine yields about 330 board feet per acre (Doyle rule) annually. A 50-year-old, fully stocked, unmanaged stand of shortleaf pine yields about 222 board feet per acre annually, and one of longleaf pine, about 28 board feet per acre annually.

Competition from undesirable species is only slight on these soils. No special problem is recognized.

Limitations on the use of equipment are slight on the soils of this group where slopes are between 2 and 8 percent. The limitation is severe on slopes of more than 8 percent. Heavy equipment is likely to damage the soils and to increase the hazard of severe erosion on the stronger slopes. Landings, skid trails, and roads through the woods need to be stabilized, and extensive practices are required to maintain them.

The hazard of erosion is only moderate where the soils have a slope of 2 to 8 percent. Slopes that are greater than 8 percent erode readily. On the stronger slopes the hazard of erosion is severe to very severe.

WOODLAND SUITABILITY GROUP 7

In this group are deep, well-drained sandy loams and loams. The soils are on uplands and have slopes of 8 to 35 percent. The following soils are in this group:

Ruston soils, 8 to 12 percent slopes.
Ruston soils, 8 to 12 percent slopes, eroded.
Ruston soils, 8 to 12 percent slopes, severely eroded.
Ruston soils, 12 to 17 percent slopes.
Ruston soils, 12 to 17 percent slopes, eroded.
Ruston soils, 12 to 17 percent slopes, severely eroded.
Ruston soils, 17 to 35 percent slopes.
Ruston soils, 17 to 35 percent slopes, eroded.
Ruston soils, 17 to 35 percent slopes, severely eroded.

The site index for loblolly pine is about 8 feet higher on the soils of this group than for shortleaf pine and 11 feet higher than for longleaf pine. Based on tables for normal yields, a 50-year-old, fully stocked, unmanaged stand of loblolly pine yields about 290 board feet per acre (Doyle rule) annually. A 50-year-old, fully stocked, unmanaged stand of shortleaf pine yields about 251 board feet per acre annually, and one of longleaf pine, about 120 board feet per acre annually.

Competition from undesirable species is only slight on these soils. No special problem is recognized.

Limitations on the use of equipment are slight on the soils that have a slope of 8 to 12 percent and moderate on soils that have a slope greater than 12 percent.

The hazard of erosion is severe to very severe on soils that have a slope greater than 17 percent. In woodland operations special management is needed to protect the soils from erosion. Roads and skid trails ought to be run on the contour as nearly as feasible, and equipment ought to be run across the slope. Special consideration needs to be given to placing landings in suitable locations.

WOODLAND SUITABILITY GROUP 8

Waverly silt loam is the only soil in this group. This soil is nearly level and is silty and poorly drained. It is on bottom lands and is subject to frequent overflow.

On this soil the site index for loblolly pine is about 80 feet. Fewer than five sites were observed, however, so this may not be an accurate estimate. Shortleaf and longleaf pines usually do not grow on this soil. Based on tables of normal yields, a 50-year-old, fully stocked, unmanaged stand of loblolly pine on this soil yields about 230 board feet per acre (Doyle rule) annually.

Competition from undesirable species, limitations on the use of equipment, and the hazard of windthrow and erosion are essentially the same for this soil as for the soils of woodland suitability group 1.

Yields from woodland

Yields from stands that are unmanaged, though fully stocked, are not considered a true measure of productivity. They do, however, show how the productivity of one site is related to that of another. They also make it possible to compare yields of loblolly pine with yields of shortleaf pine or longleaf pine on a given soil.

Table 3 shows the growth and yields of unmanaged stands of loblolly, shortleaf, and longleaf pines. In table 3, however, practices used to obtain the yields given are not clearly defined. Because yields vary with the practices used, with the intensity of management, and with the uses to be made of the wood (pulpwood; pulpwood and sawlogs; sawlogs, poles, and pilings; or other uses), the yields given can be used only to compare the productivity of one site with another and the yields of loblolly pine with those of shortleaf or longleaf pine. Potential yields are much greater than those shown in table 3.

TABLE 3.—*Stand and yield information for fully stocked, unmanaged, second-growth stands of loblolly pine, shortleaf pine, and longleaf pine*

LOBLOLLY PINE

Site index	Age	Total merchantable volume per acre		Average diameter at breastheight
		Cords of rough wood	Board feet (Doyle rule)	
	Years			*Inches*
70	20	17	----------	5. 4
	30	31	1, 000	7. 8
	40	42	3, 500	9. 6
	50	50	6, 500	10. 9
	60	55	10, 000	12. 1
	70	59	12, 500	13. 0
	80	62	15, 000	13. 8
80	20	22	----------	6. 2
	30	38	2, 000	8. 7
	40	51	6, 000	10. 7
	50	60	11, 500	12. 2
	60	66	16, 000	13. 6
	70	70	19, 500	14. 6
	80	73	22, 000	15. 5
90	20	27	----------	6. 9
	30	46	4, 000	9. 6
	40	61	10, 000	11. 7
	50	71	16, 500	13. 6
	60	78	22, 000	15. 0
	70	82	26, 000	16. 2
	80	85	29, 000	17. 2
100	20	32	500	7. 4
	30	53	6, 000	10. 4
	40	71	14, 500	12. 8
	50	84	23, 000	14. 7
	60	92	29, 500	16. 2
	70	96	33, 000	17. 6
	80	100	35, 500	18. 6

TABLE 3.—*Stand and yield information for fully stocked, unmanaged, second-growth stands of loblolly pine, shortleaf pine, and longleaf pine*—Continued

SHORTLEAF PINE

Site index	Age	Total merchantable volume per acre		Average diameter at breastheight
		Cords of rough wood	Board feet (Doyle rule)	
	Years			*Inches*
60	20	12	----------	3. 8
	30	32	----------	5. 7
	40	46	1, 550	7. 3
	50	54	4, 350	8. 4
	60	60	7, 600	9. 7
	70	65	10, 250	10. 6
	80	68	12, 700	11. 4
70	20	18	----------	4. 5
	30	41	750	6. 6
	40	56	4, 000	8. 4
	50	66	8, 650	9. 8
	60	73	12, 600	11. 0
	70	79	16, 250	12. 0
	80	83	19, 400	12. 8
80	20	25	----------	5. 2
	30	48	1, 950	7. 5
	40	65	7, 650	9. 5
	50	77	13, 550	11. 1
	60	85	18, 850	12. 3
	70	92	23, 450	13. 3
	80	97	27, 550	14. 2
90	20	30	----------	6. 1
	30	54	4, 550	8. 8
	40	73	12, 600	10. 9
	50	87	20, 450	12. 6
	60	98	27, 400	14. 0
	70	105	32, 850	15. 2
	80	112	37, 400	16. 2

LONGLEAF PINE

Site index	Age	Cords of rough wood	Board feet (Doyle rule)	Average diameter at breastheight
50	20	4	----------	2. 8
	30	11	----------	4. 1
	40	17	----------	5. 1
	50	21	500	5. 9
	60	25	1, 000	6. 6
	70	28	2, 000	7. 2
	80	31	2, 500	7. 8
60	20	8	----------	3. 3
	30	19	----------	4. 9
	40	27	500	6. 0
	50	34	2, 000	7. 0
	60	40	3, 500	7. 8
	70	45	5, 000	8. 5
	80	49	7, 000	9. 1
70	20	14	----------	3. 8
	30	28	----------	5. 5
	40	39	2, 000	6. 8
	50	48	4, 500	7. 9
	60	55	7, 000	8. 8
	70	62	9, 500	9. 6
	80	67	12, 500	10. 3
80	20	20	----------	4. 7
	30	36	1, 000	6. 1
	40	49	4, 000	7. 6
	50	61	7, 500	8. 8
	60	70	11, 500	9. 8
	70	78	15, 500	10. 6
	80	85	19, 500	11. 5

Wildlife

Wildlife is abundant in Lincoln County. Deer, mink, beaver, raccoon, skunk, rabbit, and squirrel live in the many natural habitats. The streams and lakes contain black bass, bluegills, and catfish. Many farm ponds are stocked with fish. Bobwhite quail, mourning doves, meadowlarks, robins, and other birds that eat insects are common in the upland areas; on the lakes and bottom lands are ducks, herons, killdeers, woodcocks, and sandpipers. Hawks, owls, skunks, moles, shrews, and other small birds and animals are valuable for controlling insects and rodents.

Many kinds of wildlife can live on the farm if food, water, and cover are provided. Almost every farm has areas that can be managed to encourage the production of wildlife. The natural habitats need to be protected from fire and grazing. Fences should be built around the brushy areas, and the small ponds need to be protected.

A general plan for developing and improving wildlife habitats will include the following minimum practices:

1. Prepare a site, if necessary, and plant trees and shrubs that will furnish food and cover for wildlife.
2. Cultivate the plants, and protect the site from burning and grazing.
3. Plant and cultivate sloping land on the contour.
4. Give particular attention to plantings in gullies, along the banks of streams and ditches, in fence rows and hedges, and along the sides of roads.
5. Develop a complete conservation plan that will provide food, water, and cover for wildlife during the entire year (fig. 7).

Technical assistance in developing habitats and in stocking farm ponds can be obtained from a local technician of the Soil Conservation Service or the county agent. It can also be obtained from the State Fish and Game Department, from the United States Fish and Wildlife Service, or from a forester for the State or Federal Government.

Figure 7.—Border of lespedeza bicolor, established where woodland joins cultivated fields. This border will provide food and cover for wildlife.

Engineering Applications

This soil survey report for Lincoln County, Miss., contains information that engineers can use to—

1. Make soil and land use studies that will aid in selecting and developing industrial, business, residential, and recreational sites.
2. Assist in designing drainage and irrigation structures and in planning dams and other structures that will help conserve soil and water.
3. Make reconnaissance surveys of soil and ground conditions that will aid in selecting locations for highways and airports and in planning detailed studies of the soils at the intended locations.
4. Locate sand and gravel for use in construction.
5. Correlate pavement performance with types of soil and thus develop information that will be useful in designing and maintaining the pavements.
6. Determine the suitability of soil units for cross-country movement of vehicles and construction equipment.
7. Supplement information obtained from other published maps and reports and aerial photographs for the purpose of making soil maps and reports that can be readily used by engineers.

The mapping and the descriptive report are somewhat generalized, however, and should be used only in planning more detailed field surveys to determine the in-place condition of the soil at the site of the proposed engineering structure.

At many construction sites, there are major variations in the soils within the depth of the proposed excavation, and soils of several different kinds occur within short distances. The soil map and the profile descriptions, as well as the engineering data given in this section, should be used in planning a detailed survey of the soils at the site where construction is planned. By using the information in the soil survey report, the soils engineer can concentrate on the most important soil units. Then, a minimum number of soil samples can be obtained for laboratory testing, and an adequate soil investigation can be made at minimum cost.

Some of the terms used in this section and in other parts of the report are those employed by soil scientists, and they may not be familiar to engineers. Also, some terms, for example, soil, clay, silt, sand, aggregate, and granular, seem familiar but have a special meaning in soil science that does not correspond with the meaning ordinarily understood in engineering. Most of these terms, as well as other special terms, are defined in the Glossary at the back of the report.

Engineering classification systems

Most highway engineers classify soil materials in accordance with the system approved by the American Association of State Highway Officials (*1*). In this system soil materials are classified in seven principal groups. The groups range from A–1, consisting of gravelly soils of high bearing capacity, to A–7, consisting of clay soils that have low strength when wet.

Within each of the principal groups, the relative engineering value of the soil material is indicated by a group index number. Group index numbers range from 0 for the best material to 20 for the poorest. The group index number is shown in parentheses, following the soil group symbol, in the next to last column of table 6.

Some engineers prefer to use the Unified soil classification system (*8*). In this system the soils are identified according to their texture and plasticity and are grouped according to their performance as engineering construction materials. The system establishes 15 soil groups, which are divided as (1) coarse-grained soils (eight classes), (2) fine-grained soils (six classes), and (3) highly organic soils. The classification of the tested soils, according to the Unified system, is given in the last column of table 6.

Engineering interpretations and soil test data

The engineer should know the physical properties of the soil material and the in-place condition of the soils to help him make the best use of the soil map and the soil survey report. After he has tested the soils and has observed their behavior in structures and foundations, an

TABLE 4.—*Brief description of the soils*

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Map symbol	Soil	Depth to seasonally high water table	Brief site and soil description	Depth from surface
		Feet		*Inches*
Am	Almo silt loam.	0 to 1	Silt loam over gray, heavy silt loam or silty clay loam; clay loam is at a depth of 42 inches; a fragipan is at a depth of 14 to 18 inches.	0 to 2 2 to 16 16 to 42 42 to 49
BuB2 BuA BuB BuB3 BuC BuC2 BuC3	Bude silt loam, 2 to 5 percent slopes, eroded. Bude silt loam, 0 to 2 percent slopes. Bude silt loam, 2 to 5 percent slopes. Bude silt loam, 2 to 5 percent slopes, severely eroded. Bude silt loam, 5 to 8 percent slopes. Bude silt loam, 5 to 8 percent slopes, eroded. Bude silt loam, 5 to 8 percent slopes, severely eroded.	1 to 2	Silt loam over silty clay loam; a fragipan is at a depth of about 16 inches; it is underlain by sandy loam, silt loam, or clay loam at a depth of 30 to 40 inches.	0 to 6 6 to 17 17 to 28 28 to 51
Co Cs	Collins silt loam. Collins and Iuka soils.	0 to 3 2 to 4	The Collins soils consist of silt loam to a depth of more than 50 inches; the Iuka soils are loam to a depth of 20 inches; below a depth of 20 inches, they are loam to sandy loam.	0 to 7 7 to 50
DbC DbB DbB2 DbC2 DbC3	Dulac and Boswell soils, 5 to 8 percent slopes. Dulac and Boswell soils, 2 to 5 percent slopes. Dulac and Boswell soils, 2 to 5 percent slopes, eroded. Dulac and Boswell soils, 5 to 8 percent slopes, eroded. Dulac and Boswell soils, 5 to 8 percent slopes, severely eroded.	1 to 4	Variable; the Dulac soils consist of 24 inches of silt loam or silty clay loam that is underlain by clay at a depth of about 30 inches; the Boswell soils consist of loam or sandy loam that is underlain by clay at a depth of about 10 inches; a fragipan is at a depth of 18 to 24 inches in the Dulac soils.	Dulac: 0 to 6 6 to 18 18 to 24 24 to 55 Boswell: 0 to 7 7 to 56
Fa Fm	Falaya silt loam. Falaya silt loam, local alluvium.	1 to 2	Silt loam to a depth of 50 inches	0 to 6 6 to 44
GgF GgB GgC GgD GgD2	Guin gravelly sandy loam, 17 to 40 percent slopes. Guin gravelly sandy loam, 2 to 5 percent slopes. Guin gravelly sandy loam, 5 to 8 percent slopes. Guin gravelly sandy loam, 8 to 12 percent slopes. Guin gravelly sandy loam, 8 to 12 percent slopes, eroded.	More than 10	Gravelly sandy loam to a depth of about 4 feet over gravelly loamy sand; the amount of gravel varies in all layers, ranging in volume from 25 to 80 percent.	0 to 10 10 to 45 45 to 60

engineer can estimate design requirements for the different soils shown on the map. Tables 4 and 5 give a summary of the physical properties of the different soils and their suitability for engineering uses.

Explanation of table 4.—Table 4 gives a brief description of the soils in the county and their estimated physical properties. The estimates are given for each significant layer of a typical profile, generally for each soil series, and the depth from the surface is given in inches. More complete descriptions of the profiles are given in the section "Descriptions of Soils."

The reaction of the soils is not indicated in table 4, but, except for the Collins and Falaya soils, all the soils have a pH between 4.5 and 5.5. The pH of the Collins soils ranges from 5.6 to 6.5, and that of the Falaya soils, from 5.0 to 6.0.

In table 4 the soils are classified according to the textural classes of the United States Department of Agriculture. In addition, estimates are given of the Unified classification of the soil material and of the classification used by the American Association of State Highway Officials. The estimated classifications are based partly on the results of testing representative soils given in table 6. They are also based on experience with similar soils in other counties and on information given in the rest of the report.

In table 4 the columns that show the amount of material passing through a No. 200 sieve show the separation between the coarse-grained and fine-grained soils.

and their estimated physical properties

not available or is not applicable]

Classification			Percentage passing sieve—		Permeability	Available water capacity	Shrink-swell potential
USDA texture	Unified	AASHO	No. 10 (2.0 mm.)	No. 200 (0.074 mm.)			
					Inches per hour	*Inches per foot of depth*	
Silt loam	ML or CL	A-4	100	90 to 100	0.2 to 0.8	1. 4	Low.
Silt loam	ML or CL	A-4	100	85 to 100	0.2 to 0.8	1. 4	Low.
Silt loam to silty clay loam	ML or CL	A-4	100	85 to 100	0.2 to 0.8	1. 4	Low.
Clay loam	ML or CL	A-6	100	80 to 95	0.05 to 0.2	1. 0	Low to moderate.
Silt loam	ML or CL	A-4 or A-6	100	90 to 100	0.2 to 0.8	1. 4	Low to moderate.
Silty clay loam	ML-CL or CL	A-6	100	85 to 99	0.2 to 0.8	1. 4	Moderate.
Silty clay loam	CL	A-6	100	85 to 99	0.05 to 0.2	1. 2	Moderate.
Silt loam	CL	A-6 or A-7	100	75 to 95	0.05 to 0.2	1. 2	Moderate.
Silt loam	ML or CL	A-4	100	80 to 100	0.8 to 2.5	1. 5	Low.
Silt loam	ML or CL	A-4	100	80 to 100	0.8 to 2.5	1. 5	Low.
Silt loam	ML	A-4 or A-6	100	80 to 100	0.8 to 2.5	1. 3	Low.
Silt loam	ML	A-4 or A-6	100	80 to 100	0.8 to 2.5	1. 3	Low.
Silty clay loam	CL or CH	A-6 or A-7	100	80 to 100	0.2 to 0.8	1. 3	Moderate to high.
Clay	CL or CH	A-7	100	80 to 100	0.2 to 0.8	1. 0	High.
Loam	CL	A-4 or A-6	100	50 to 85	0.8 to 2.5	1. 2	Low to moderate.
Clay	CH or MH	A-7	100	70 to 100	(1)	1. 0	Moderate to high.
Silt loam	ML or CL	A-4	100	80 to 100	0.8 to 2.5	1. 5	Low.
Silt loam	ML or ML-CL.	A-4	100	80 to 100	0.8 to 2.5	1. 5	Low.
Gravelly sandy loam	SM or SC	A-2 or A-4	90	20 to 40	5 to 10	. 7	Low.
Gravelly sandy loam	SM or SC	A-2 or A-4	85	20 to 40	5 to 10	. 8	Low.
Gravelly loamy sand	SM	A-2	75	15 to 35	5 to 10	. 6	Low.

TABLE 4.—*Brief description of the soils and*

[Blanks indicate information is

Map symbol	Soil	Depth to seasonally high water table	Brief site and soil description	Depth from surface
		Feet		*Inches*
GgE	Guin gravelly sandy loam, 12 to 17 percent slopes.			
GgE2	Guin gravelly sandy loam, 12 to 17 percent slopes, eroded.			
GgF2	Guin gravelly sandy loam, 17 to 40 percent slopes, eroded.			
GbF	Guin and Boswell soils, 17 to 40 percent slopes.	Variable; ranges from 2 to more than 10.	Variable; the Guin soils consist of gravelly sandy loam to a depth of more than 10 feet; the Boswell soils consist of sandy loam that overlies clay at a depth of 10 to 20 inches.	For description For description
GbD2	Guin and Boswell soils, 8 to 12 percent slopes, eroded.			
GbD3	Guin and Boswell soils, 8 to 12 percent slopes, severely eroded.			
GbE2	Guin and Boswell soils, 12 to 17 percent slopes, eroded.			
GbE3	Guin and Boswell soils, 12 to 17 percent slopes, severely eroded.			
GbF2	Guin and Boswell soils, 17 to 40 percent slopes, eroded.			
GbF3	Guin and Boswell soils, 17 to 40 percent slopes, severely eroded.			
Gu	Gullied land.		Variable; gully erosion has been severe; soils too variable to estimate their physical properties.	
HfA	Hatchie and Freeland silt loams, 0 to 2 percent slopes.	1 to 2	Terrace soils; silt loam over silty clay loam; a fragipan is at a depth of 13 to 24 inches; underlain by loam or sandy loam at a depth of 40 to 50 inches.	Hatchie: 0 to 6 6 to 15 15 to 40 40 to 50 Freeland: 0 to 6 6 to 20 20 to 41 41 to 50
HfB	Hatchie and Freeland silt loams, 2 to 5 percent slopes.			
HfB2	Hatchie and Freeland silt loams, 2 to 5 percent slopes, eroded.			
Hs	Henry silt loam.	0 to 1	Gray silt loam to a depth of 2 feet over silty clay loam; the soils are in depressions and are poorly drained; they have a fragipan at a depth of 10 to 14 inches.	0 to 9 9 to 13 13 to 23 23 to 44
OaB2	Ora silt loam, 2 to 5 percent slopes, eroded.	2 to 3	Silt loam over loam and clay loam; a fragipan at a depth of 22 inches is underlain by sandy loam.	0 to 6 6 to 30 30 to 50
OaB	Ora silt loam, 2 to 5 percent slopes.			
OaB3	Ora silt loam, 2 to 5 percent slopes, severely eroded.			
OaC	Ora silt loam, 5 to 8 percent slopes.			
OaC2	Ora silt loam, 5 to 8 percent slopes, eroded.			
OaC3	Ora silt loam, 5 to 8 percent slopes, severely eroded.			
OrC2	Ora and Ruston soils, 5 to 8 percent slopes, eroded.	Variable; 2 to more than 10.	Mixtures of Ora and Ruston soils	For profile des- For profile des-
OrB2	Ora and Ruston soils, 2 to 5 percent slopes, eroded.			
OrC	Ora and Ruston soils, 5 to 8 percent slopes.			
OrC3	Ora and Ruston soils, 5 to 8 percent slopes, severely eroded.			
PhB2	Pheba silt loam, 2 to 5 percent slopes, eroded.	1 to 2	Silt loam over loam or clay loam; a fragipan at a depth of 14 inches is underlain by clay loam.	0 to 6 6 to 14 14 to 40 40 to 60
PhB	Pheba silt loam, 2 to 5 percent slopes.			

their estimated physical properties—Continued

not available or is not applicable]

Classification: USDA texture	Classification: Unified	Classification: AASHO	Percentage passing sieve—: No. 10 (2.0 mm.)	Percentage passing sieve—: No. 200 (0.074 mm.)	Permeability	Available water capacity	Shrink-swell potential
					Inches per hour	*Inches per foot of depth*	
of Boswell soils, see Dulac and Boswell soils.							
of Guin soils, see Guin gravelly sandy loams.							
Silt loam	ML or CL	A-4	100	70 to 100	0.2 to 0.8	1. 4	Low.
Silt loam	ML or CL	A-4	100	70 to 95	0.2 to 0.8	1. 4	Low.
Silt loam	ML or CL	A-4 or A-6	100	60 to 95	0.2 to 0.8	1. 2	Low to moderate.
Loam	ML or SM	A-4	100	40 to 65	0.05 to 0.2	1. 2	Low.
Silt loam	ML or CL	A-4	100	70 to 100	0.2 to 0.8	1. 4	Low.
Silt loam	ML or CL	A-4	100	70 to 95	0.2 to 0.8	1. 4	Low.
Silt loam	ML or CL	A-4	100	60 to 95	0.2 to 0.8	1. 2	Low to moderate.
Loam to sandy loam	ML or SM	A-4	100	35 to 65	0.05 to 0.2	1. 2	Low.
Silt loam	ML or CL	A-4	100	85 to 100	0.8 to 2.5	1. 4	Low.
Silt loam	ML or CL	A-4	100	85 to 100	0.2 to 0.8	1. 4	Low.
Silt loam	ML or CL	A-4	100	85 to 100	0.2 to 0.8	1. 0	Low.
Silty clay loam	CL or CH	A-6 or A-7	100	85 to 100	([1])	1. 0	Moderate to high.
Silt loam	ML or CL	A-4 or A-6	100	60 to 95	0.2 to 2.5	1. 5	Low to moderate.
Silt loam to loam	ML or CL	A-4 to A-6	100	50 to 85	0.8 to 2.5	1. 5	Low to moderate.
Sandy loam	ML or CL	A-4 or A-6	100	50 to 70	0.05 to 0.2	. 7	Low to moderate.
cription and data on the Ora soil, see Ora silt loams.							
cription and data on the Ruston soil, see Ruston soils.							
Silt loam	ML or CL	A-4	100	75 to 95	0.8 to 2.5	1. 4	Low.
Clay loam	CL or CH	A-6 or A-7	100	70 to 90	0.8 to 2.5	1. 4	Moderate to high.
Clay loam	CL or CH	A-6 or A-7	100	60 to 80	0.2 to 0.8	1. 4	Moderate to high.
Clay loam	CL or CH	A-6 or A-7	100	60 to 80	0.05 to 0.2	1. 2	Moderate to high.

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TABLE 4.—*Brief description of the soils and*

[Blanks indicate information is

Map symbol	Soil	Depth to seasonally high water table	Brief site and soil description	Depth from surface
		Feet		*Inches*
PrB2	Providence silt loam, 2 to 5 percent slopes, eroded.	2 to 3	Silt loam or silty clay loam; a fragipan of silt loam at a depth of 24 inches is underlain by loam, sandy loam, or clay loam.	0 to 7
PrB	Providence silt loam, 2 to 5 percent slopes.			7 to 23
PrB3	Providence silt loam, 2 to 5 percent slopes, severely eroded.			23 to 38
				38 to 60
PrC	Providence silt loam, 5 to 8 percent slopes.			
PrC2	Providence silt loam, 5 to 8 percent slopes, eroded.			
PrC3	Providence silt loam, 5 to 8 percent slopes, severely eroded.			
PrD2	Providence silt loam, 8 to 12 percent slopes, eroded.			
PrD3	Providence silt loam, 8 to 12 percent slopes, severely eroded.			
RuE	Ruston soils, 12 to 17 percent slopes.	More than 10.	Fine sandy loam to coarse sandy loam overlies sandy clay loam; underlain by sandy loam.	0 to 12
RuD	Ruston soils, 8 to 12 percent slopes.			12 to 48
RuD2	Ruston soils, 8 to 12 percent slopes, eroded.			48 to 60
RuD3	Ruston soils, 8 to 12 percent slopes, severely eroded.			
RuE2	Ruston soils, 12 to 17 percent slopes, eroded.			
RuE3	Ruston soils, 12 to 17 percent slopes, severely eroded.			
RuF	Ruston soils, 17 to 35 percent slopes.			
RuF2	Ruston soils, 17 to 35 percent slopes, eroded.			
RuF3	Ruston soils, 17 to 35 percent slopes, severely eroded.			
Sa	Sandy alluvial land.	Variable	Excessively drained sand and a mixture of soils of different textures near the banks of creeks or along the channels of wide streams.	Too variable to
Wa	Waverly silt loam.	0 to 1	Gray silt loam to a depth of 6 feet; soils are on bottoms and are poorly drained.	0 to 6
				6 to 40

[1] Less than 0.05.

In the column that shows permeability, an estimate of the probable rate of water percolation is given. The rate is expressed in inches per hour. The permeability of each soil layer is important in planning the drainage of a farm. Layers of soil that impede drainage or that are very permeable and that allow easy drainage in comparison with adjacent layers may greatly affect the suitability of the soil material for foundations. Permeability depends mainly on the texture of the soil and on its structure, but it may be affected by other physical properties. The structure, consistence, and content of organic matter affect the permeability and moisture-holding capacity of the soil. These factors should be considered in designing an irrigation system.

The column that shows available water capacity gives the amount of water, in inches per foot of soil depth, that is held in the root zone and is available to a crop. The total moisture-holding capacity of a soil, in inches per foot of depth, is approximately twice the available water capacity.

The column showing shrink-swell potential indicates the volume change to be expected of the soil material as the result of changes in the content of moisture. It is estimated primarily on the basis of the amount and type of clay and is expressed as *low*, *moderate*, or *high*. In general, soils classified as CH and A-7 have a high shrink-swell potential. Clean sands and gravels (single *their estimated physical properties*—Continued

not available or is not applicable]

Classification			Percentage passing sieve—		Permeability	Available water capacity	Shrink-swell potential
USDA texture	Unified	AASHO	No. 10 (2.0 mm.)	No. 200 (0.074 mm.)			
					Inches per hour	*Inches per foot of depth*	
Silt loam	ML or CL	A-4 or A-6	100	85 to 100	0.8 to 2.5	1.6	Low.
Silty clay loam	CL	A-7	100	85 to 100	0.2 to 0.8	1.6	Moderate.
Silt loam	ML-CL or CL.	A-6	100	60 to 90	0.05 to 0.2	1.8	Moderate.
Loam or sandy loam	SC or CL	A-2 or A-6	100	35 to 70	0.05 to 0.2	.7	Moderate.
Fine sandy loam to sandy loam.	SM	A-2 or A-4	100	20 to 50	2.5 to 5.0	1.5	Low.
Sandy clay loam to sandy loam.	SM or SC	A-2 or A-4	100	30 to 50	0.8 to 2.5	1.7	Low to moderate.
Sandy loam	SM	A-2 or A-4	100	20 to 50	2.5 to 5.0	1.5	Low.
estimate physical properties.							
Silt loam	ML	A-4	100	85 to 100	0.2 to 0.8	1.4	Low.
Silt loam	ML or CL	A-4	100	85 to 100	0.05 to 0.2	1.4	Low.

grain) and those having a small amount of nonplastic to slightly plastic soil material have a low shrink-swell potential. A typical example of soil material that has moderate to high shrink-swell potential is that in the subsoil of the Boswell soils. A typical example of soil material having a low shrink-swell potential is that in the Guin gravelly sandy loams.

Explanation of table 5.—Table 5 rates the various soils according to their suitability for road subgrade and road fill. It also rates them according to their suitability as a source of topsoil, sand, and gravel and indicates soil characteristics that are important in the construction of highways. The data are based on experience with the same kinds of soils in other counties and on information given in other parts of this report. Difficulties in highway construction in this county are caused mainly by the characteristics of the soil materials and by drainage. Bedrock is at a great enough depth that it presents no problem in the construction of highways.

Several columns in table 5 give ratings or comments that indicate the suitability of the soil material when used for different engineering purposes. Some of these columns need explanation.

TABLE 5.—*Engineering*

Map symbol	Soil series [1]	Suitability for winter grading	Suitability of soil material for road subgrade	Stability of soil material if used for road fill	Suitability as source of—	
					Topsoil	Sand and gravel
Am	Almo silt loam	Poor because of high water table.	Poor	Poor	Poor	Not suited
BuA, BuB, BuB2, BuB3, BuC, BuC2, BuC3.	Bude silt loam	Poor to fair because of high water table.	Fair to poor	Fair	Poor to fair	Not suited
Co	Collins silt loam	Poor to fair because of high water table.	Fair to poor	Poor	Fair to good	Not suited
Cs	Collins and Iuka soils	Poor to fair because of high water table.	Fair	Fair	Fair to good	Not suited
DbB, DbB2, DbC, DbC2, DbC3.	Dulac and Boswell soils	Fair because of high water table.	Poor	Poor	Fair to good	Not suited
Fa	Falaya silt loam	Poor because of high water table.	Fair to poor	Poor to fair	Fair	Not suited
Fm	Falaya silt loam, local alluvium.	Poor because of high water table.	Fair to poor	Poor	Fair	Not suited
GgB, GgC, GgD, GgD2, GgE, GgE2, GgF, GgF2.	Guin gravelly sandy loam	Good	Good	Fair to good	Fair to good	Suited
GbD2, GbD3, GbE2, GbE3, GbF, GbF2, GbF3.	Guin and Boswell soils	Variable; poor in Boswell soil; good in Guin.	Fair to good	Fair to good	Fair	Moderately well suited.
HfA, HfB, HfB2.	Hatchie and Freeland silt loams.	Poor to fair because of high water table.	Fair to poor	Fair	Poor to fair	Not suited
Hs	Henry silt loam	Poor because of high water table.	Poor	Poor	Poor	Not suited
OaB, OaB2, OaB3, OaC, OaC2, OaC3.	Ora silt loam	Fair	Fair to good	Fair	Fair to good	Not suited

See footnotes at end of table.

interpretations of the soils

Factors that affect vertical alinement of highways—		Soil features affecting engineering practices—				
Materials	Drainage	Farm ponds or other reservoir areas	Dikes, levees, or embankments	Agricultural drainage	Irrigation	Terraces and diversions
Soil material inferior for deep cuts.	Perched water table; poor permeability.	Material adequate; very little seepage.	Material adequate.	Level; perched water table; needs drainage.	Slow infiltration; shallow root zone.	
Soil material better for deep cuts than shallow ones.	Perched water table; fair permeability.	Moderate risk of seepage where cuts extend below pan.	Material adequate.	Perched water table; needs drainage in nearly level areas.	Fairly slow infiltration; pan at a depth of less than 20 inches.	Moderately erodible.
Soil material inferior for deep cuts.	Fair to good permeability; subject to flooding.	Moderate risk of seepage because underlying material varies.	Material adequate.	Needs drainage; moderately high water table.	No unfavorable features.	
Soil material fair to good, better for deep cuts than shallow ones.	Subject to flooding; good permeability.	Material adequate, but sandy lenses allow seepage in places.	Material adequate.	Moderately high water table.	High water table; irrigaton not commonly needed.	
Soil material inferior for cuts more than 3 feet deep; plastic clay at a depth of 15 to 24 inches.	Moderately well drained; fair to good permeability; clays have slow permeability.	Material adequate, although clayey material difficult to compact.	Material adequate.	Moderately well drained; has pan or clayey subsoil.	Pan or clayey layer at a depth of less than 20 inches.	Moderately to highly erodible.
Soil material inferior for deep cuts.	Subject to flooding; somewhat poorly drained; fair permeability.	Material adequate	Material adequate.	High water table	Fair infiltration; high water table; irrigation not commonly needed.	
Soil material inferior for deep cuts.	Subject to flooding; somewhat poorly drained; fair permeability.	Material adequate	Material adequate.	High water table; somewhat poorly drained; needs drainage.	High water table; irrigation not commonly needed.	
Soil material fair to good.	Excessively drained.	Gravelly; very porous; excessive seepage.	Gravelly; poor compaction; porous.	Excessively drained.	Gravelly; low water-holding capacity; mostly steep.	Too gravelly for cultivation.
Soil material fair to good.	Moderately well drained to excessively drained.	Gravelly; high risk of seepage.	Gravelly; poor compaction; porous.	Adequate	Gravelly or clayey; too steep for irrigation.	Too steep for terraces and diversions and unfavorable for cultivation.
Soil material better for deep cuts than shallow ones.	Somewhat poorly drained; fair permeability.	Moderate risk of seepage where cuts extend to a depth below pan.	Material adequate.	Perched water table; needs drainage.	Fairly slow infiltration; pan at a depth of less than 20 inches.	Moderately erodible.
Soil material inferior.	Poorly drained; slow permeability.	Material adequate; very little risk of seepage.	Material adequate.	Perched water table; poorly drained; slow permeability; needs drainage.	Slow infiltration; pan at a depth of 15 inches or less.	
Soil material better for deep cuts than shallow ones.	Moderately well drained; good permeability.	Moderate seepage where cuts extend to a depth well below pan.	Material adequate.	Adequate	Fair infiltration; pan at a depth of 24 inches.	Moderately erodible.

TABLE 5.—*Engineering*

Map symbol	Soil series [1]	Suitability for winter grading	Suitability of soil material for road subgrade	Stability of soil material if used for road fill	Suitability as source of—	
					Topsoil	Sand and gravel
OrB2, OrC, OrC2, OrC3.	Ora and Ruston soils	Fair	Fair to good	Fair to reasonably good.	Fair to good	Not suited
PhB, PhB2	Pheba silt loam	Poor to fair because of high water table.	Fair to poor	Fair	Poor to fair	Not suited
PrB, PrB2, PrB3, PrC, PrC2, PrC3, PrD2, PrD3.	Providence silt loam	Fair	Fair to poor	Fair to poor	Fair to poor	Not suited
RuD, RuD2, RuD3, RuE, RuE2, RuE3, RuF, RuF2, RuF3.	Ruston soils	Good	Fair to good	Fair to good	Fair to good	Poorly suited
Wa	Waverly silt loam	Poor because of high water table.	Poor	Poor	Poor	Not suited

[1] Suitability of the soil materials for engineering purposes are not given for Gullied land and Sandy alluvial land because the soil materials in those land types are variable.

The ratings given for suitability for winter grading or for earthwork in winter and early in spring are based on drainage and on the workability of the soil material when wet. During the period from December to April, the average rainfall in this county is more than 4 inches per month. The rainfall is evenly distributed. The soil material may not dry to the desired moisture content for earthwork unless construction is delayed or artificial means for drying the material are used. Also, during this period, the water table in most of the soils is at its highest elevation of the year. Only the Guin gravelly sandy loams and the Ruston soils were rated as well suited to winter grading or earthwork in winter and early in spring. The Guin gravelly sandy loams and Ruston soils have good permeability and dry rapidly. In addition, the water table is below the normal depth of excavation.

Earthwork can also be carried on in winter and early in spring in the Providence, Dulac, and Bude soils formed in sandy coastal plain material. Earthwork is difficult, however, in the fine-textured soils of these series.

Earthwork in the Almo, Henry, Collins, Falaya, and Waverly soils is limited in winter and early in spring because the water table is near the surface. Earthwork in soils formed in loess may be restricted because loessal material cannot be compacted if the content of moisture is only slightly in excess of optimum for compaction.

Soils, such as the Henry, Almo, and Waverly, have ponded water on the surface, or the water table is near the surface for a long period each year. Roads on these soils must be constructed on embankment sections or provided with an adequate system of underdrains and surface drains. In low areas that are subject to flooding, roads on such soils as the Collins, Falaya, Iuka, and Waverly should be constructed on a continuous embankment that is several feet above the level of frequent flooding.

The Bude, Providence, Henry, Almo, Dulac, Ora, Pheba, Hatchie, and Freeland soils have a compact layer (fragipan) near the surface. This compact layer impedes vertical drainage and results in a perched water table. Both the fragipan and perched water table need to be considered when roads are planned.

In nearly level areas the ditches along the sides of the road should extend below the fragipan, and the pavement grade needs to be at least 4 feet above the top of the pan. In steeper areas road cuts normally extend below the depth of the pan, but adequate underdrainage must be provided where the cut section changes to a fill section. This can be done by removing the material in the fragipan and replacing it with soil material that is more permeable. A similar problem arises when roads are built on the Boswell and Dulac soils, which have strata of very plastic coastal plain material. Where roads are to be built on the Boswell and Dulac soils, the very plastic coastal plain material needs to be removed and replaced by more permeable material that is not plastic.

interpretations of the soils—Continued

Factors that affect vertical alinement of highways—		Soil features affecting engineering practices—				
Materials	Drainage	Farm ponds or other reservoir areas	Dikes, levees, or embankments	Agricultural drainage	Irrigation	Terraces and diversions
Soil material better for deep cuts than shallow ones.	Moderately well drained to well drained; good permeability.	Moderate seepage where cuts extend to a depth well below pan.	Material adequate.	Adequate	Part of acreage has pan at a depth of 24 inches.	Moderately erodible.
Soil material better for deep cuts than shallow ones.	Somewhat poorly drained; fair permeability.	Material adequate	Material adequate.	Perched water table over pan.	Fairly slow infiltration; pan at a depth of less than 17 inches.	Moderately erodible.
Soil material better for deep cuts than shallow ones.	Moderately well drained; good permeability.	Moderate seepage where cuts extend to a depth below pan.	Material adequate.	Adequate	Fairly slow infiltration.	Moderately erodible.
Soil material generally uniform.	Well drained; good permeability.	Rapid seepage in material underlying subsoil.	Material adequate.	Adequate	Too steep for cultivation.	Moderately to highly erodible.
Soil material inferior	Poorly drained; slow permeability; subject to flooding.	Material adequate	Material adequate.	High water table; poorly drained; slow permeability; needs drainage.	Fairly slow infiltration; irrigation not commonly needed.	

Soils formed in loess are highly susceptible to water erosion when runoff is concentrated. Therefore, gutters and ditches need sodding, paving, or check dams to protect them from excessive erosion.

The gravelly strata in the coastal plain sediments underlying the Guin soils are possible sources of material for use in subbase and base courses of pavements, and the material may be used as surfacing for county roads. In some places the Ruston and Providence soils also have gravelly strata similar to those in the Guin soils. These coastal plain strata normally contain clay and other materials that are not suitable for roads. The sand and gravel in these strata may not be suitable for use in concrete structures or for the surface course of a flexible pavement.

Explanation of table 6.—Table 6 gives the engineering test data for soil samples from profiles of five soil series. Most of the samples were taken in Lincoln County, but the Falaya were from Warren County. The samples for the soils formed in a thin layer of loess over coastal plain sediments were obtained at a depth of less than 7 feet. Therefore, they are not representative of the soil material in deep excavations.

Of the soils tested, table 6 gives compaction (moisture density) only for the Falaya soils. If a soil material is compacted at successively higher moisture content, assuming that the compaction effort remains constant, the density of the compacted material will increase until the optimum moisture content is reached. After that, the density decreases with increase in moisture content. The highest dry density obtained in the compaction test is termed maximum dry density. Moisture-density data are important in earthwork for, as a rule, optimum stability is obtained if the soil is compacted to about the maximum dry density when it is at approximately the optimum moisture content.

The engineering soil classifications in table 6 are based on data obtained by mechanical analyses and by tests to determine liquid limits and plastic limits. Mechanical analyses were made by combined sieve and hydrometer methods. Percentages of clay obtained by the hydrometer method should not be used in naming the textural classes of soils.

The tests for liquid limit and plastic limit measure the effect of water on the consistence of soil material. As the moisture content of a clayey soil increases from a very dry state, the material changes from a solid to a semisolid or plastic state. As the moisture content is further increased, the material changes from a plastic to a liquid state. The plastic limit is the moisture content at which the soil material passes from a solid to a plastic state. The liquid limit is the moisture content at which the material passes from a plastic to a liquid state. The plasticity index is the numerical difference between the liquid limit and the plastic limit. It indicates the range of moisture content within which a soil material is plastic.

TABLE 6.—*Engineering test data* [1] *for*

Soil name and location	Parent material	Bureau of Public Roads report number	Depth	Horizon	Moisture density: Maximum dry density	Moisture density: Optimum moisture
			Inches		*Lb. per cu. ft.*	*Percent*
Bude silt loam:						
SE¼SW¼ sec. 33, T. 8 N., R. 7 E.	Loess over coastal plain sediments.	S34314	4 to 10	B_{22}	([5])	([5])
		S34315	14 to 26	B_{3m1}	([5])	([5])
		S34316	48 to 77	D_2	([5])	([5])
Falaya silt loam:						
(Taken in Warren County):						
NE¼NW¼ sec. 23, T. 14 N., R. 4 E.	Loess.	S34032	0 to 6	A_1	100	20
		S34033	6 to 18	C_1	107	17
		S34034	18 to 48	C_2	107	17
Hatchie silt loam:						
SW¼NW¼ sec. 22, T. 7 N., R. 9 E.	Loess over coastal plain sediments.	S34320	5 to 15	B_2	([5])	([5])
		S34321	27 to 62	B_{3m2}	([5])	([5])
		S34322	62 to 82	D_{1g}	([5])	([5])
Lax loam: [6]						
NE¼NE¼ sec. 27, T. 8 N., R. 6 E.	Loess over coastal plain sediments.	S34326	12 to 19	B_2	([5])	([5])
		S34327	28 to 40	B_{3m2}	([5])	([5])
		S34328	56 to 65	D_{m2}	([5])	([5])
Lax loam to silty loam: [6]						
NE¼NE¼ sec. 4, T. 8 N., R. 6 E.	Loess over coastal plain sediments.	S34329	13 to 18	B_2	([5])	([5])
		S34330	24 to 38	D_{1m}	([5])	([5])
		S34331	63 to 87	D_4	([5])	([5])
Providence silt loam:						
SW¼SE¼ sec. 8, T. 8 N., R. 8 E.	Loess over coastal plain sediments.	S34332	8 to 18	B_{22}	([5])	([5])
		S34333	24 to 38	B_{3m2}	([5])	([5])
		S34334	46 to 70	D_m	([5])	([5])

[1] Tests performed by the Bureau of Public Roads in accordance with standard procedures of the American Association of State Highway Officials (AASHO).

[2] Mechanical analysis according to the AASHO Designation: T 88–54. Results by this procedure frequently may differ somewhat from results that would have been obtained by the soil survey procedure of the Soil Conservation Service (SCS). In the AASHO procedure the fine material is analyzed by the hydrometer method and the various grain-size fractions are calculated on the basis of all the material, including that coarser than 2 millimeters in diameter. In the SCS soil survey procedure, the fine material is analyzed by the pipette method and the material coarser than 2 millimeters in diameter is excluded from calculations of grain-size fractions. The mechanical

Descriptions of Soils

In the following pages the soils of Lincoln County are arranged alphabetically by soil series and characteristics of each series are described. Then, a detailed description of a mapping unit considered to be typical of the series is given and the other mapping units are described by comparing them to the typical mapping unit. The approximate acreage and proportionate extent of the soils mapped are given in table 7.

The description of the profile given under the first mapping unit is brief, but a more detailed profile description is given for each series in the section "Formation, Classification, and Morphology of Soils." Some of the terms used to describe the profile may not be familiar to the reader, or they may have a special meaning in soil science. Most of these terms have been defined in the Glossary in the back of the report.

The reader will find that many of the soils have a fragipan. This is a dense, brittle layer in the subsoil. The fragipan is hard when dry, but owes its hardness mainly to extreme density or compactness rather than to a high content of clay or cementation. Fragments of the pan that are removed are friable, but the material in place is so dense that roots have trouble penetrating, and water moves through it very slowly because of the small size of the pores.

Erosion is also a problem in this county. A number of the soils are already severely eroded. Others are susceptible to severe erosion if they are not protected.

Almo Series

The Almo series consists of poorly drained soils of terraces. The soils formed in loess and in sandy coastal plain material. They have a surface layer of silt loam and a subsoil of gray, heavy silt loam or silty clay loam. A fragipan is at a depth of about 14 to 18 inches. The soils are acid throughout. The slope ranges from 0 to 2 percent.

These soils are associated with the Hatchie, Freeland, and Falaya soils. They are grayer and more poorly drained than the Hatchie and Freeland soils and have a developed B horizon that is absent in the Falaya soils.

soil samples taken from four soil profiles

Mechanical analysis [2]								Liquid limit	Plasticity index	Classification	
Percentage passing sieve—				Percentage smaller than—						AASHO [3]	Unified [4]
No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)	0.05 mm.	0.02 mm.	0.005 mm.	0.002 mm.				
--------	---------	100	98	96	75	35	29	39	15	A–6(10)	ML–CL.
--------	100	99	93	91	68	28	22	37	16	A–6(10)	CL.
99	98	96	80	78	62	40	34	49	28	A–7–6(17)	CL.
--------	---------	100	99	97	67	21	15	35	8	A–4(8)	ML.
--------	---------	---------	100	97	64	18	13	30	7	A–4(8)	ML–CL.
--------	---------	---------	100	98	61	16	12	30	6	A–4(8)	ML–CL.
--------	100	99	81	75	47	22	17	26	8	A–4(8)	CL.
--------	100	96	87	83	59	26	19	30	11	A–6(8)	CL.
--------	100	89	62	56	37	19	14	24	10	A–4(5)	CL.
96	95	89	77	76	60	33	28	39	16	A–6(10)	CL.
93	89	74	47	46	39	30	27	39	17	A–6(5)	SC.
78	72	60	30	30	25	22	19	40	40	A–2–6(2)	SC.
--------	100	93	80	79	65	38	32	44	20	A–7–6(13)	CL.
95	90	69	34	32	22	14	8	20	6	A–2–4(0)	SM–SC.
--------	---------	100	40	39	35	31	25	31	14	A–6(2)	CL.
--------	100	99	94	93	73	41	33	43	19	A–7–6(12)	CL.
--------	100	99	91	89	69	35	28	37	14	A–6(10)	ML–CL.
99	98	95	70	67	52	29	26	33	15	A–6(9)	CL.

analyses used in this table are not suitable for use in naming textural classes for soils.
[3] Based on Standard Specifications for Highway Materials and Methods of Sampling and Testing (Pt. 1, Ed. 7): The Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes, AASHO Designation: M 145–49.
[4] Based on the Unified Soil Classification System, Tech. Memo. No. 3–357, v. 1, Waterways Expt. Sta., Corps of Engin., March 1953.
[5] Information not available.
[6] The Lax soils are not mapped separately in Lincoln County but are mapped with the Providence soils.

The Almo soils are along the major streams. They make up less than 1 percent of the acreage in the county.

These soils are better suited to timber or pasture than to tilled crops. The native vegetation is mainly mixed hardwoods. Only one soil of this series, Almo silt loam, is mapped in Lincoln County.

Almo silt loam (Am).—This poorly drained, silty soil is on terraces along streams. A typical profile contains the following layers:

- 0 to 2 inches, dark grayish-brown silt loam.
- 2 to 16 inches, mottled gray and brownish-yellow, friable silt loam; blocky structure.
- 16 to 42 inches, (pan) mottled gray and brownish-yellow, firm, brittle silty clay loam; blocky structure.
- 42 to 49 inches +, yellowish-brown, friable clay loam with some grayish mottles.

This soil is low in fertility. It contains little organic matter and is strongly acid. Runoff is slow, and the rates of infiltration and percolation are slow to very slow. A fluctuating water table makes this soil wet in winter, and water stands on the surface during part of the year. In summer and fall the soil is commonly so dry that the growth of plants is retarded.

This soil is used mainly to grow hardwoods, but small areas have been cleared and used for pasture. Drainage is the major problem. Most of the areas that are pastured are drained by V- or W-type ditches or by dragline ditches. Capability unit A–7–IVw–2; woodland suitability group 1.

Boswell Series

The Boswell series consists of moderately well drained soils of uplands that formed in coastal plain sands and clays. The soils are reddish at a depth between about 10 and 17 inches. They have a clayey texture and subangular blocky to angular blocky structure. In most places the parent material consists of mottled red and brownish-yellow, structureless clay. The soils have slopes of 2 to 8 percent. They are not mapped separately in this county but are mapped in undifferentiated soil groups with the Dulac and Guin soils.

For a description of a typical profile of a Boswell soil, turn to the description of Dulac and Boswell soils, 5 to 8 percent slopes. A profile is also described under Guin and Boswell soils, 17 to 40 percent slopes.

Bude Series

The Bude series consists of somewhat poorly drained soils of uplands. The soils formed in a thin layer of loess that overlies sandy coastal plain material. They have a surface layer of silt loam and a subsoil of strong-brown silty clay loam. The subsoil overlies a fragipan of silt loam, which is at a depth of about 17 inches. In most places the material underlying the fragipan is clay loam to sandy clay loam. The Bude soils are acid throughout. Their slope ranges from 0 to 8 percent.

The Bude soils are associated with the Providence, Ora, and Ruston soils. They are similar to the Providence soils in that the soils of both series formed in loess. They differ from the Providence soils in that they have a fragipan at a depth of 15 to 19 inches, instead of at a depth of 20 to 26 inches. The Bude soils are shallower than the Ora soils. The soils of these two series also differ in that the Ora soils formed in coastal plain material and have a loamy fragipan. The Bude soils differ from the Ruston soils in being yellower and less well drained, in having a fragipan, and in having formed partly from loessal material rather than from coastal plain material.

The Bude soils make up about 15 percent of the county. They are mainly on the gently sloping ridges.

TABLE 7.—*Approximate acreage and proportionate extent of the soils mapped*

Soil	Acres	Percent
Almo silt loam	965	0. 3
Bude silt loam, 2 to 5 percent slopes, eroded	39, 200	10. 5
Bude silt loam, 0 to 2 percent slopes	7, 379	2. 0
Bude silt loam, 2 to 5 percent slopes	10, 800	2. 9
Bude silt loam, 2 to 5 percent slopes, severely eroded	1, 164	. 3
Bude silt loam, 5 to 8 percent slopes	1, 673	. 4
Bude silt loam, 5 to 8 percent slopes, eroded	4, 388	1. 2
Bude silt loam, 5 to 8 percent slopes, severely eroded	605	. 2
Collins silt loam	4, 443	1. 2
Collins and Iuka soils	2, 431	. 7
Dulac and Boswell soils, 5 to 8 percent slopes	1, 648	. 4
Dulac and Boswell soils, 2 to 5 percent slopes	521	. 1
Dulac and Boswell soils, 2 to 5 percent slopes, eroded	1, 106	. 3
Dulac and Boswell soils, 5 to 8 percent slopes, eroded	2, 687	. 7
Dulac and Boswell soils, 5 to 8 percent slopes, severely eroded	592	. 2
Falaya silt loam	24, 909	6. 6
Falaya silt loam, local alluvium	8, 170	2. 2
Guin gravelly sandy loam, 17 to 40 percent slopes	17, 672	4. 7
Guin gravelly sandy loam, 2 to 5 percent slopes	386	. 1
Guin gravelly sandy loam, 5 to 8 percent slopes	845	. 2
Guin gravelly sandy loam, 8 to 12 percent slopes	2, 005	. 5
Guin gravelly sandy loam, 8 to 12 percent slopes, eroded	889	. 2
Guin gravelly sandy loam, 12 to 17 percent slopes	3, 097	. 8
Guin gravelly sandy loam, 12 to 17 percent slopes, eroded	1, 149	. 3
Guin gravelly sandy loam, 17 to 40 percent slopes, eroded	1, 292	. 3
Guin and Boswell soils, 17 to 40 percent slopes	2, 575	. 7
Guin and Boswell soils, 8 to 12 percent slopes, eroded	1, 705	. 5
Guin and Boswell soils, 8 to 12 percent slopes, severely eroded	486	. 1
Guin and Boswell soils, 12 to 17 percent slopes, eroded	1, 230	. 3
Guin and Boswell soils, 12 to 17 percent slopes, severely eroded	447	. 1
Guin and Boswell soils, 17 to 40 percent slopes, eroded	17, 862	4. 8
Guin and Boswell soils, 17 to 40 percent slopes, severely eroded	848	. 2
Gullied land	873	. 2
Hatchie and Freeland silt loams, 0 to 2 percent slopes	1, 922	. 5
Hatchie and Freeland silt loams, 2 to 5 percent slopes	1, 902	0. 5
Hatchie and Freeland silt loams, 2 to 5 percent slopes, eroded	741	. 2
Henry silt loam	557	. 2
Ora silt loam, 2 to 5 percent slopes, eroded	5, 463	1. 5
Ora silt loam, 2 to 5 percent slopes	933	. 3
Ora silt loam, 2 to 5 percent slopes, severely eroded	689	. 2
Ora silt loam, 5 to 8 percent slopes	297	. 1
Ora silt loam, 5 to 8 percent slopes, eroded	1, 936	. 5
Ora silt loam, 5 to 8 percent slopes, severely eroded	908	. 2
Ora and Ruston soils, 5 to 8 percent slopes, eroded	6, 515	1. 7
Ora and Ruston soils, 2 to 5 percent slopes, eroded	392	. 1
Ora and Ruston soils, 5 to 8 percent slopes	966	. 3
Ora and Ruston soils, 5 to 8 percent slopes, severely eroded	2, 163	. 6
Pheba silt loam, 2 to 5 percent slopes, eroded	2, 241	. 6
Pheba silt loam, 2 to 5 percent slopes	1, 053	. 3
Providence silt loam, 2 to 5 percent slopes, eroded	37, 049	9. 9
Providence silt loam, 2 to 5 percent slopes	3, 492	. 9
Providence silt loam, 2 to 5 percent slopes, severely eroded	4, 162	1. 1
Providence silt loam, 5 to 8 percent slopes	3, 104	. 8
Providence silt loam, 5 to 8 percent slopes, eroded	46, 742	12. 5
Providence silt loam, 5 to 8 percent slopes, severely eroded	9, 551	2. 5
Providence silt loam, 8 to 12 percent slopes, eroded	12, 443	3. 3
Providence silt loam, 8 to 12 percent slopes, severely eroded	1, 872	. 5
Ruston soils, 12 to 17 percent slopes	2, 014	. 5
Ruston soils, 8 to 12 percent slopes	3, 186	. 9
Ruston soils, 8 to 12 percent slopes, eroded	11, 803	3. 1
Ruston soils, 8 to 12 percent slopes, severely eroded	4, 804	1. 3
Ruston soils, 12 to 17 percent slopes, eroded	4, 378	1. 2
Ruston soils, 12 to 17 percent slopes, severely eroded	2, 362	. 6
Ruston soils, 17 to 35 percent slopes	3, 878	1. 0
Ruston soils, 17 to 35 percent slopes, eroded	15, 904	4. 2
Ruston soils, 17 to 35 percent slopes, severely eroded	2, 538	. 7
Sandy alluvial land	671	. 2
Waverly silt loam	10, 367	2. 8
Total	375, 040	100. 0

The Bude soils are fair for agriculture. They are used mostly for pasture, but some areas are used to grow corn, oats, and cotton. The native vegetation is mainly loblolly, shortleaf, and longleaf pines, mixed hardwoods, and native grasses.

Bude silt loam, 2 to 5 percent slopes, eroded (BuB2).—This soil is gently sloping and is somewhat poorly drained. It is on uplands. A typical profile contains the following layers:

0 to 6 inches, pale-olive, friable silt loam.
6 to 17 inches, strong-brown, friable silt loam that grades to silty clay loam; blocky structure.
17 to 42 inches, (pan) mottled dark-brown and light brownish-gray, firm silty clay loam that contains platy fragments; grades to friable silt loam below a depth of 28 inches.
42 to 52 inches +, mottled strong-brown and gray, friable silt loam; structureless.

This soil is low in fertility and contains little organic matter. The rate of infiltration is fairly slow. Permeability is moderate in the surface layer and in the upper part of the subsoil, but it is slow in the fragipan. Runoff is slow to medium. The soil erodes easily if it is not protected by a cover of plants. In most places the available moisture-holding capacity is limited because the fragipan is not far from the surface.

This soil is used mainly for pasture, but a small acreage is used to grow corn, cotton, and oats. A small acreage is also in loblolly, longleaf, and shortleaf pines and mixed hardwoods. Capability unit A7–IIIw–3; woodland suitability group 2.

Bude silt loam, 0 to 2 percent slopes (BuA).—The surface layer of this soil is 2 to 4 inches thicker in most places than that of Bude silt loam, 2 to 5 percent slopes, eroded. There is less runoff from this soil than from the more eroded one, but infiltration, permeability, fertility, and the content of organic matter are about the same.

This soil is used for pasture or is in loblolly and longleaf pines and mixed hardwoods. Capability unit A7–IIIw–2; woodland suitability group 2.

Bude silt loam, 2 to 5 percent slopes (BuB).—The surface layer of this soil is 5 to 7 inches thick. The soil is used the same as Bude silt loam, 2 to 5 percent slopes, eroded, and management is the same. Capability unit A7–IIIw–3; woodland suitability group 2.

Bude silt loam, 2 to 5 percent slopes, severely eroded (BuB3).—This soil has lost most of its original surface layer through erosion, and the former subsoil is exposed in a large part of the acreage.

The soil is low in fertility and contains little organic matter. The rate of infiltration is slow, and permeability is moderate in the upper part of the subsoil and slow in the fragipan. The fragipan is at a depth of 12 to 14 inches. The soil erodes readily if it is not protected by a cover of plants.

This soil is used to grow loblolly and shortleaf pines and mixed hardwoods. Capability unit A7–IVe–7; woodland suitability group 2.

Bude silt loam, 5 to 8 percent slopes (BuC).—This soil has stronger slopes, but a thicker surface layer, than Bude silt loam, 2 to 5 percent slopes, eroded. Runoff is also greater.

This soil is used mainly for pasture and timber, but a small acreage is used to grow oats and corn. Erosion is a hazard if the soil is not protected by a cover of plants. Capability unit A7–IIIe–5; woodland suitability group 2.

Bude silt loam, 5 to 8 percent slopes, eroded (BuC2).—The surface layer of this soil has the same thickness as that of Bude silt loam, 2 to 5 percent slopes, eroded. Surface runoff is greater than on the less sloping soil, but use and management are similar. Capability unit A7–IIIe–5; woodland suitability group 2.

Bude silt loam, 5 to 8 percent slopes, severely eroded (BuC3).—This soil is more eroded than Bude silt loam, 2 to 5 percent slopes, eroded. It has lost most of its original surface layer, and the former subsoil is exposed in a large part of the acreage.

The soil is low in fertility and contains little organic matter. The rate of infiltration is slow, and runoff is moderate. The fragipan is at a depth of 10 to 14 inches. The soil erodes readily if it is not protected by a cover of plants.

This soil is used to grow loblolly, shortleaf, and longleaf pines and mixed hardwoods. Capability unit A7–IVe–7; woodland suitability group 2.

Collins Series

The Collins series consists of moderately well drained soils of the bottom lands. The soils formed in sediments washed from Providence and Bude soils. They have a surface layer of dark grayish-brown to grayish-brown silt loam. The upper part of the underlying material is silt loam. Grayish mottles are at a depth of 19 to 24 inches. The soils are acid throughout. The slope ranges from 0 to 2 percent.

The Collins soils are along the major streams in the county. They are associated with the Falaya and Waverly soils. The Collins soils differ from the Falaya in that the Falaya soils are somewhat poorly drained and have mottles at a depth of 8 to 15 inches. They differ from the Waverly in that the Waverly soils are poorly drained, have gray mottles throughout the profile, and lack a brown color.

Collins soils are well suited to cotton, corn, oats, and similar crops. They are also suited to pasture and trees. The native vegetation is mainly mixed hardwoods, and a few areas are in loblolly pine.

Collins silt loam (Co).—This is a nearly level, moderately well drained soil that is subject to overflow. A typical profile contains the following layers:

0 to 30 inches, grayish-brown, friable silt loam grading to dark brown; mottled with brownish gray below a depth of 22 inches.
30 to 50 inches +, light-gray, friable silt loam mottled with dark yellowish brown; many fine, soft, dark concretions.

This soil contains little organic matter. Water moves readily through the profile, and the available moisture-holding capacity is high. Permeability is moderately rapid.

This is a good soil for agriculture. It is used mainly for pasture, but corn, cotton, and oats are also grown, and part of the acreage is in timber.

Drainage is needed on this soil. W-type ditches have been used to remove the excess surface water. Caving streambanks and overfalls are problems. Capability unit A7–IIw–1; woodland suitability group 3.

Collins and Iuka soils (Cs).—This is an undifferentiated unit containing Collins and Iuka soils. The Collins soil is moderately well drained and is on bottom lands. It formed in silty loess and has a surface layer and subsoil of silt loam. The Iuka soil is also moderately well drained. Like the Collins soil, it is on bottom lands, but it formed from sandy coastal plain material. The Iuka soil has a surface layer and subsoil of loam or sandy loam.

The Collins soil makes up about 60 percent of this unit, and the Iuka soil, 40 percent. Some small areas consist entirely of the Collins soil, and some, of the Iuka. Most areas contain both of these soils.

In the areas of Collins soil, the profile is like that described for Collins silt loam. A typical profile of an Iuka soil contains the following layers:

0 to 20 inches, brown, friable loam that grades, with depth, to sandy loam.
20 to 30 inches, grayish-brown, very friable sandy loam or loam that has gray mottles.
30 to 47 inches +, mottled gray and yellowish-brown, friable very fine sandy loam.

Collins and Iuka soils contain little organic matter and are strongly acid. Water moves through their profiles readily, and their available moisture-holding capacity is high. Permeability is moderately rapid. These soils are used mainly for timber, but a small part of their acreage is in pasture. They are also well suited to crops. These soils need drainage, and W-type ditches have been used to remove the excess surface water. Caving streambanks and overfalls are also problems. Capability unit A7–IIw–1; woodland suitability group 3.

Dulac Series

The Dulac series consists of moderately well drained soils of uplands. The soils formed in a thin mantle of loess that overlies coastal plain clay. They have a surface layer of silt loam and a subsoil of strong-brown silty clay loam. A fragipan of silt loam, at a depth of 18 to 24 inches, lies just above the coastal plain clay. The soils are strongly acid. Their slope ranges from 2 to 8 percent.

These soils are associated with the Providence, Bude, Ruston, and Boswell soils. They are similar to the Providence soils in that they have a fragipan, but they differ from the Providence soils in texture of the underlying material. The Dulac soils are better drained than the Bude soils, but they are less well drained than the Ruston soils. They differ from the Boswell soils in being less red and in having a subsoil of silty clay loam instead of clay.

The Dulac soils are primarily in the northeastern part of the county. They are mapped in undifferentiated units with the Boswell soils and make up only about 1 percent of the acreage.

These soils are fair for agriculture. They are used to some extent for corn, oats, and cotton, but most of the acreage is used for pasture or trees. The native vegetation is mainly loblolly and longleaf pines, mixed hardwoods, and native grasses.

Dulac and Boswell soils, 5 to 8 percent slopes (DbC).—This is an undifferentiated unit containing Dulac and Boswell soils. The Dulac and Boswell soils are both moderately well drained, but the Dulac soil has a fragipan at a depth of 18 to 24 inches and formed in a thin mantle of loess over coastal plain clay. The Boswell soil lacks a fragipan and formed in coastal plain clay.

The Dulac soil occupies about 70 percent of this unit. All of the acreage in some small areas is Dulac, and all of it in other small areas is Boswell. Most areas contain both of these soils.

A typical profile of a Dulac soil contains the following layers:

0 to 10 inches, grayish-brown, grading to brownish-yellow, silt loam.
10 to 18 inches, strong-brown, friable to firm silty clay loam; blocky structure.
18 to 24 inches, (pan) mottled strong-brown, gray, and red, firm silty clay loam; blocky structure.
24 to 55 inches +, mottled yellowish-brown, red, and gray, firm clay; predominantly gray, plastic clay below a depth of 34 inches.

A typical profile of a Boswell soil contains the following layers:

0 to 7 inches, light brownish-gray loam.
7 to 17 inches, brownish-yellow clay loam grading with increasing depth to yellowish-red clay; blocky structure.
17 to 56 inches +, mottled gray, yellow, and red, plastic clay; angular blocky structure.

The soils in this unit contain little organic matter and are strongly acid. Because of differences in the characteristics of the soils, the rates of infiltration and permeability vary. The available moisture-holding capacity ranges from low to moderate.

These soils are suited to cultivated crops if they are managed carefully, but they are used mainly as woodland. Capability unit A7–IIIe–4; woodland suitability group 4.

Dulac and Boswell soils, 2 to 5 percent slopes (DbB).—The surface layer of these soils is variable, but it has the same thickness as the surface layer of Dulac and Boswell soils, 5 to 8 percent slopes. The soils are used mainly for timber, but a small acreage is in row crops. Capability unit A7–IIe–5; woodland suitability group 4.

Dulac and Boswell soils, 2 to 5 percent slopes, eroded (DbB2).—The surface layer of these soils is thinner than the surface layer of Dulac and Boswell soils, 5 to 8 percent slopes. The soils have lost from 2 to 4 inches of the original surface layer through erosion, and in places the former subsoil is exposed.

These soils are used mainly for pasture and timber, but a small acreage is in row crops. Capability unit A7–IIe–5; woodland suitability group 4.

Dulac and Boswell soils, 5 to 8 percent slopes, eroded (DbC2).—These soils have a thinner surface layer than Dulac and Boswell soils, 5 to 8 percent slopes, and a greater amount of runoff. In places there are shallow gullies.

The soils are used mainly for pasture and timber, but a small acreage is in row crops. Capability unit A7–IIIe–4; woodland suitability group 4.

Dulac and Boswell soils, 5 to 8 percent slopes, severely eroded (DbC3).—These soils have lost most of their original surface layer through erosion. As a result, the plow layer is browner or redder than that of Dulac and Boswell soils, 5 to 8 percent slopes. In a few places there are shallow gullies. The soils were once cleared to grow

row crops, but now all of the acreage is in timber. Capability unit A7–IVe–5; woodland suitability group 4.

Falaya Series

The Falaya series consists of somewhat poorly drained soils of bottom lands. The soils are forming in sediments washed from Providence and Bude soils. They have a surface layer of grayish-brown to dark-brown silt loam. The upper part of the parent material is brown or dark brown to dark yellowish brown and has gray or grayish-brown mottles. At a depth between 11 and 20 inches, the soil material is gray, or gleyed. The Falaya soils are acid throughout. The slope ranges from 0 to 2 percent.

These soils are along streams and occur in association with Collins, Waverly, and Almo soils. They are more poorly drained than the Collins soils and are better drained and browner than the Waverly soils. The Falaya soils are better drained than the Almo soils but lack the developed subsoil that is typical of the Almo soils.

The Falaya soils are used mainly for pasture but they are fairly good for row crops. The native vegetation is chiefly mixed hardwoods, but there are a few small areas in loblolly pine.

Falaya silt loam (Fa).—This is a somewhat poorly drained soil on first bottoms that are subject to overflow. A typical profile contains the following layers:

0 to 14 inches, dark-brown, friable silt loam; some mottles in the lower part.
14 to 20 inches, mottled dark-brown and gray, friable silt loam.
20 to 44 inches +, gray, friable silt loam mottled with dark brown; small, dark concretions are common.

This soil contains little organic matter and is strongly acid. The rates of infiltration and permeability are moderate, and fertility is moderate to high.

Pasture is the main use of this soil, but small acreages are in oats and in corn and other row crops. The soil needs drainage; V- or W-type ditches are used to remove the excess surface water. Caving streambanks and overfalls are problems. Capability unit A7–IIIw–1; woodland suitability group 5.

Falaya silt loam, local alluvium (Fm).—This somewhat poorly drained soil has a profile similar to the one described for Falaya silt loam. The soil is forming in local alluvium. It occupies small areas along the upper parts of the small branches of large streams.

The soil is used mainly for pasture, but a smaller acreage is in timber or row crops. In areas that are cropped, V- and W-type ditches are needed to remove the excess surface water. Diversion terraces are also needed. They will protect this soil from being flooded by runoff from higher lying areas. Capability unit A7–IIIw–1; woodland suitability group 5.

Freeland Series

The Freeland series consists of moderately well drained soils formed in silty loess and sandy coastal plain material. The soils are on terraces along streams. The slope ranges from 0 to 5 percent. The surface layer is dark grayish-brown silt loam, and the subsoil is brown to dark-brown silty clay loam, underlain by loam to sandy loam. A fragipan is at a depth of 19 to 22 inches.

The Freeland soils are not mapped separately in this county but are mapped with the Hatchie soils. For a description of a typical profile of a Freeland soil, turn to the description of Hatchie and Freeland silt loams, 0 to 2 percent slopes.

Guin Series

The Guin series consists of well-drained to excessively drained soils of uplands. The soils formed from gravelly coastal plain material. They have a surface layer and a subsoil of gravelly sandy loam. The content of gravel in the profile is as much as 70 to 80 percent. The soils are acid throughout. In most places the slope is between 17 and 40 percent, but in small areas it is only 2 percent.

These soils are mainly in the northeastern and northwestern parts of the county and are associated with the Ruston, Providence, and Boswell soils. They are better drained and redder than the Providence soils and formed in coastal plain material instead of a thin mantle of loess. In contrast to the Ruston soils, the Guin soils have gravel throughout the profile. They differ from the Boswell soils in that they contain gravel and do not have clay in the profile.

The Guin soils are better suited to timber than to row crops or pasture, but small areas are in pasture. The native vegetation is mainly shortleaf and loblolly pines, mixed hardwoods, and native grasses.

Guin gravelly sandy loam, 17 to 40 percent slopes (GgF).—This gravelly, strongly sloping soil is droughty. A typical profile contains the following layers:

0 to 17 inches, light yellowish-brown, very friable gravelly sandy loam.
17 to 45 inches, yellowish-red, very friable gravelly sandy loam; the content of gravel increases with increasing depth.
45 to 60 inches +, yellowish-red very gravelly loamy sand.

This soil is low in fertility and contains little organic matter. The rates of infiltration and permeability are rapid, and the available moisture-holding capacity is low. The soil becomes seriously eroded if it is not protected by a cover of plants. It is in shortleaf and loblolly pines and mixed hardwoods. Capability unit A3–VIIs–1; woodland suitability group 6.

Guin gravelly sandy loam, 2 to 5 percent slopes (GgB).—This soil contains about the same amount of organic matter as Guin gravelly sandy loam, 17 to 40 percent slopes, and fertility, runoff, and permeability are about the same. The soil is mainly in shortleaf and loblolly pines and mixed hardwoods, but small areas are used for pasture and field crops. Capability unit A3–VIs–2; woodland suitability group 6.

Guin gravelly sandy loam, 5 to 8 percent slopes (GgC).—The profile of this soil is similar to that of Guin gravelly sandy loam, 17 to 40 percent slopes. The soil is mainly in shortleaf and loblolly pines and mixed hardwoods, but a small acreage is in pasture and field crops Capability unit A3–VIs–2; woodland suitability group 6.

Guin gravelly sandy loam, 8 to 12 percent slopes (GgD).—This soil is less sloping than Guin gravelly sandy loam, 17 to 40 percent slopes, but otherwise it is similar. It is mainly in shortleaf and loblolly pines and mixed hardwoods, but a small acreage is used for pasture. Capability unit A3–VIs–2; woodland suitability group 6.

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Guin gravelly sandy loam, 8 to 12 percent slopes, eroded (GgD2).—This soil is more eroded than Guin gravelly sandy loam, 17 to 40 percent slopes, and its surface layer contains more gravel. In some places the present surface layer consists of red or yellowish-red soil material that was formerly in the lower part of the profile. In places there are shallow gullies.

This soil was once cleared for crops, but it is now in shortleaf and loblolly pines and mixed hardwoods. Capability unit A3–VIs–2; woodland suitability group 6.

Guin gravelly sandy loam, 12 to 17 percent slopes (GgE).—Except for slope, this soil is similar to Guin gravelly sandy loam, 17 to 40 percent slopes. It is used to grow shortleaf and loblolly pines and mixed hardwoods. Capability unit A3–VIIs–1; woodland suitability group 6.

Guin gravelly sandy loam, 12 to 17 percent slopes, eroded (GgE2).—Most of the original surface layer of this soil has been lost through erosion. The present plow layer contains more gravel and is redder than that of Guin gravelly sandy loam, 17 to 40 percent slopes. In places there are gullies.

This soil was once used for pasture or field crops. It is now in shortleaf and loblolly pines and mixed hardwoods. Capability unit A3–VIIs–1; woodland suitability group 6.

Guin gravelly sandy loam, 17 to 40 percent slopes, eroded (GgF2).—This soil is more eroded and contains more gravel than Guin gravelly sandy loam, 17 to 40 percent slopes. Also, its surface layer is redder, and there are gullies in many places. The soil is in shortleaf and loblolly pines and mixed hardwoods. Capability unit A3–VIIs–1; woodland suitability group 6.

Guin and Boswell soils, 17 to 40 percent slopes (GbF).—This is an undifferentiated unit containing Guin and Boswell soils. The Guin soil is deep and well drained to excessively drained. It occurs on uplands and formed in gravelly coastal plain material. This soil has a surface layer and a subsoil of gravelly sandy loam. The Boswell soil is moderately well drained and is moderately shallow over plastic clay. It formed in clayey coastal plain material. The Boswell soil has a surface layer of loam and a subsoil of clay loam to clay.

The Guin soil makes up about 75 percent of this mapping unit, and the Boswell soil, about 25 percent. Some small areas consist entirely of the Guin soil, and others, of the Boswell soil. Most areas contain both of these soils.

In the areas of Guin soil, the profile is like that described for Guin gravelly sandy loam, 17 to 40 percent slopes. A typical profile of a Boswell soil contains the following layers:

0 to 8 inches, dark-gray to brown loam.
8 to 26 inches, red, firm clay that has a blocky structure; plastic when wet; lower 6 inches has grayish mottles.
26 to 50 inches +, mottled red, brown, and gray, firm clay; very plastic when wet.

The Guin soil in this unit is similar to Guin gravelly sandy loam, 17 to 40 percent slopes, in that it is low in fertility and contains little organic matter. Infiltration and permeability are the same as for that soil, and the available moisture-holding capacity is the same.

The Boswell soil is strongly acid. Like the Guin soil, it is low in fertility and contains little organic matter. Permeability is rapid, infiltration is moderate, and the available moisture-holding capacity is moderate.

The soils of this mapping unit are poorly suited to cultivated crops because of their strong slope and low productivity. Also, the gravel in the Guin soil and the plastic clay in the Boswell soil make them poor for cultivated crops. A large part of the acreage is in forest, a use to which the soils are probably best suited. Capability unit A3–VIIe–4; woodland suitability group 6.

Guin and Boswell soils, 8 to 12 percent slopes, eroded (GbD2).—In this unit the Guin soil has lost 5 to 7 inches of the original surface layer through erosion, and the Boswell soil has lost 3 to 5 inches. In places the present surface layer of the Boswell soil is clay that was formerly part of the subsoil.

The soils of this mapping unit are chiefly in timber, but a small acreage has been cleared and is used for pasture. Capability unit A3–VIe–5; woodland suitability group 6.

Guin and Boswell soils, 8 to 12 percent slopes, severely eroded (GbD3).—In the part of this unit that is made up of Guin soil, the plow layer is gravelly sandy clay loam or gravelly sandy loam. In the part that consists of Boswell soil, the plow layer is red, plastic clay that was formerly part of the subsoil. In most places the Guin soil in this unit contains more gravel than the less eroded Guin soils.

The soils of this mapping unit are not suited to cultivated crops. They were once used for field crops and pasture, but they are now in timber. Capability unit A3–VIe–5; woodland suitability group 6.

Guin and Boswell soils, 12 to 17 percent slopes, eroded (GbE2).—These soils are not suitable for cultivation. All of the acreage is in timber. Capability unit A3–VIIe–4; woodland suitability group 6.

Guin and Boswell soils, 12 to 17 percent slopes, severely eroded (GbE3).—In this unit the Guin soil has lost most of the original surface layer through erosion, and the present surface layer consists of gravelly sandy loam that contains a high proportion of gravel. Erosion has also removed most of the original surface layer of the Boswell soil, and the present surface layer consists of clay loam or clay. In the Boswell soil infiltration and permeability are slow and surface runoff is rapid.

The soils of this mapping unit are not suitable for cultivation. They were once cleared and used for field crops or pasture, but now all of the acreage is in timber. Capability unit A3–VIIe–4; woodland suitability group 6.

Guin and Boswell soils, 17 to 40 percent slopes, eroded (GbF2).—The soils in this unit have a thinner surface layer than Guin and Boswell soils, 17 to 40 percent slopes. Infiltration, permeability, and the available moisture-holding capacity are all variable.

These soils are used the same as Guin and Boswell soils, 17 to 40 percent slopes, and management is about the same. They are mainly in timber. Capability unit A3–VIIe–4; woodland suitability group 6.

Guin and Boswell soils, 17 to 40 percent slopes, severely eroded (GbF3).—The soils in this unit are more eroded than Guin and Boswell soils, 17 to 40 percent slopes. As a result, the plow layer in the Guin soil is more gravelly than that in Guin and Boswell soils, 17 to 40 percent slopes, and the plow layer in the Boswell soil is mainly plastic clay.

The soils are not suitable for cultivated crops and are mainly in timber. If they are used for pasture, yields are low. Capability unit A3–VIIe–4; woodland suitability group 6.

Gullied Land

Gullied land consists of land that is gullied and severely eroded. The areas cannot be reclaimed for crops, except by using slow and expensive practices.

Gullied land (Gu).—This miscellaneous land type consists of areas of gullied soils formed in loess and coastal plain material. Erosion has been so severe that the surface layer of the soils, as well as much of the subsoil, has been lost. In places all of the layer of loess has washed away and the coastal plain material is exposed. Many of the gullies are too deep to cross with farm machinery.

Runoff is rapid in areas of this land type. The capacity to hold available moisture is low.

All of this land type was once used for field crops (fig. 8). Now, it is mainly in timber, but small areas are used for pasture. The yields of pasture are low. Capability unit A7–VIIe–3.

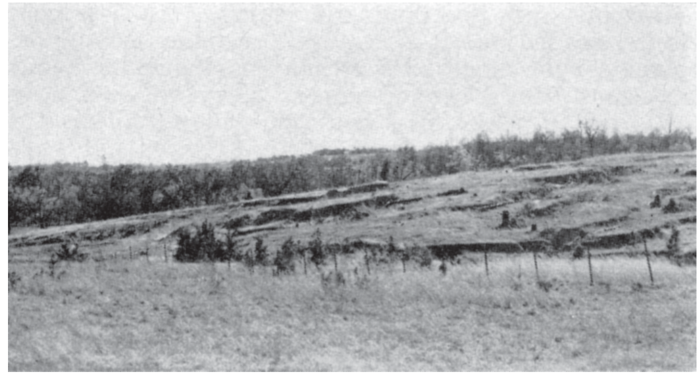

Figure 8.—**Area of Gullied land no longer suitable for field crops or pasture.**

Hatchie Series

The Hatchie series consists of somewhat poorly drained soils of stream terraces. The soils formed in a thin mantle of loess that overlies sandy coastal plain material. They have a surface layer of dark-brown silt loam and a subsoil of strong-brown silt loam to light silty clay loam. A fragipan, which begins at a depth of 13 to 16 inches, is underlain by loam or sandy loam. The loam or sandy loam is at a depth of 36 to 42 inches. The soils are acid throughout. The slope ranges from 0 to 5 percent.

These soils are associated with the Almo soils. They are better drained than the Almo soils, and their subsoil is strong brown or brown rather than gray like that of the Almo soils. The Hatchie soils are also associated with the Freeland soils and are mapped in undifferentiated units with those soils. They are more poorly drained than the Freeland soils, and their fragipan is closer to the surface.

These soils are along the major streams throughout the county. They are suitable for crops, pasture, and timber. The native vegetation is chiefly mixed hardwoods, pines, and native grasses.

Hatchie and Freeland silt loams, 0 to 2 percent slopes (HfA).—This is an undifferentiated unit containing Hatchie and Freeland silt loams. Both soils are on stream terraces. They formed in a thin mantle of loess over sandy coastal plain material. The surface layer of these soils is brown to dark grayish-brown silt loam. Their subsoil is brown to strong brown and contains a fragipan.

The Hatchie soil is somewhat poorly drained and has a fragipan at a depth of 13 to 16 inches. The Freeland soil is moderately well drained and has a fragipan at a depth of 19 to 22 inches.

The Hatchie soil makes up about 70 percent of the unit, and the Freeland soil, about 30 percent. Some small areas consist entirely of the Hatchie soil, and some, of the Freeland soil. Most areas contain both of these soils. A typical profile of a Hatchie silt loam contains the following layers:

0 to 6 inches, dark-brown silt loam.
6 to 15 inches, strong-brown silt loam to silty clay loam; has a few mottles in the lower part.
15 to 40 inches, (pan) mottled gray and strong-brown, friable but brittle silt loam; blocky structure.
40 to 50 inches +, strong-brown, friable silt loam with some grayish mottles.

Small, dark concretions are common below the surface layer. In places there is a thin layer of overwash.

A typical profile of a Freeland silt loam contains the following layers:

0 to 6 inches, dark grayish-brown silt loam.
6 to 20 inches, brown, friable silty clay loam; blocky structure.
20 to 41 inches, (pan) mottled yellowish-brown and gray, friable silt loam; blocky structure; the fragments are brittle.
41 to 50 inches +, dark-brown loam grading with increasing depth to sandy loam.

Small, dark concretions are common below a depth of 20 inches.

The soils of this mapping unit contain little organic matter and are strongly acid. Infiltration is moderately slow. The soil is moderately permeable down to the fragipan, but the fragipan is slowly permeable. The available moisture-holding capacity is moderately low because of the limiting effect of the fragipan. Roots cannot penetrate the pan. Water moves through the pan very slowly. As a result, there are periods when the soil is too wet and periods when it is too dry.

These soils are fair for such crops as oats and corn. They are excellent for pasture and timber. Capability unit A7–IIIw–2; woodland suitability group 2.

Hatchie and Freeland silt loams, 2 to 5 percent slopes (HfB).—These soils have profiles that are similar to the profiles of Hatchie and Freeland silt loams, 0 to 2 percent slopes, but their slopes are stronger. The rate of infiltration is moderately slow. Permeability is moderate in the upper part of the subsoil and slow in the fragipan. The available moisture-holding capacity is limited because the soils are shallow. The soils contain little organic matter and are low in fertility.

The soils of this mapping unit are more suitable for grass than for other crops. Most of the acreage is in pasture, but small areas are in field crops or trees. Capability unit A7–IIIw–3; woodland suitability group 2.

Hatchie and Freeland silt loams, 2 to 5 percent slopes, eroded (HfB2).—These soils are more sloping and have a thinner surface layer than Hatchie and Freeland silt loams, 0 to 2 percent slopes. They are used about the same as those soils, however, and management is similar. Capability unit A7–IIIw–3; woodland suitability group 2.

Henry Series

The Henry series consists of poorly drained soils of uplands. The soils formed in a thin mantle of loess that overlies sandy coastal plain material. They have a surface layer of gray silt loam and a subsoil of gray silt loam to heavy silt loam. A fragipan is at a depth of 10 to 14 inches. In most places the parent material is silt loam to clay loam. The soils are acid throughout. The slope ranges from 0 to 2 percent.

These soils are associated with the Providence and Bude soils. They are grayer throughout the profile than the Providence and Bude soils, and they have a fragipan nearer the surface.

The Henry soils are in small depressions or on flats. They occupy less than 1 percent of the acreage in the county.

These soils are poor for agriculture. They are better suited to grasses and legumes or to trees than to tilled crops. Only one soil of this series, Henry silt loam, occurs in Lincoln County.

Henry silt loam (Hs).—This is a nearly level, poorly drained soil in slight depressions. A typical profile contains the following layers:

0 to 9 inches, light-gray silt loam.
9 to 13 inches, light-gray silt loam; blocky structure; contains many small, dark concretions.
13 to 23 inches, (pan) light-gray, firm silt loam; somewhat mottled; contains many small, dark concretions.
23 to 44 inches +, gray, firm silty clay loam mottled with yellow; blocky structure.

This soil contains little organic matter. The rate of infiltration is slow. Permeability is moderate in the upper part of the subsoil and slow in the fragipan. The soils are low in fertility. They are wet during rainy seasons and dry in dry weather.

This soil is mainly in mixed hardwoods and loblolly pines, but a few areas are used for pasture. Capability unit A7–IVw–2; woodland suitability group 1.

Iuka Series

The Iuka series consists of moderately well drained soils of bottom lands. The soils formed from coastal plain material. Their texture ranges from sand to silt and is variable throughout the profile. At a depth of 20 to 30 inches, these soils have a layer that is grayish, or gleyed, because they have been waterlogged.

The Iuka soils are mapped in undifferentiated soil groups with the Collins soils. A profile that is typical of these soils is described under the mapping unit, Collins and Iuka soils.

Ora Series

The Ora series consists of moderately well drained soils of uplands. The soils formed in coastal plain material. They have a surface layer of dark grayish-brown to grayish-brown silt loam. The subsoil is yellowish red and overlies a fragipan of mottled brown and gray, which is at a depth of 20 to 24 inches. The soils are acid throughout. The slope ranges from 2 to 8 percent.

These soils are in the southern part of the county and are associated with the Pheba and Ruston soils. The Ora soils are better drained, redder, and deeper than the Pheba soils. They are lighter colored than the Ruston soils and, unlike those soils, they have a fragipan.

The Ora soils are suited to field crops, pasture, and timber. The native vegetation is mainly loblolly and longleaf pines, mixed hardwoods, and native grasses.

Ora silt loam, 2 to 5 percent slopes, eroded (OaB2).—This is a gently sloping, moderately well drained soil of uplands. It has a fragipan at a depth of about 22 inches. A typical profile contains the following layers:

0 to 6 inches, brown silt loam or loam.
6 to 22 inches, yellowish-red, friable clay loam; blocky structure.
22 to 36 inches, (pan) strong-brown loam mottled with brownish yellow; blocky structure; brittle.
36 to 59 inches, red, friable sandy loam mottled with brownish yellow.

This soil contains little organic matter. Infiltration is moderate. Permeability is moderate down to the fragipan, but slow in that layer. The available moisture-holding capacity is usually adequate for plant growth.

This soil is well suited to field crops, pasture, and timber. Erosion is a hazard if the soil is not protected. Capability unit A3–IIe–7; woodland suitability group 4.

Ora silt loam, 2 to 5 percent slopes (OaB).—This soil has a thicker surface layer than Ora silt loam, 2 to 5 percent slopes, eroded, but it is used and managed in the same way. In most places the surface layer is 8 to 9 inches thick. Capability unit A3–IIe–7; woodland suitability group 4.

Ora silt loam, 2 to 5 percent slopes, severely eroded (OaB3).—This soil has lost most of its original surface layer through erosion, and the present surface layer consists of material that was formerly part of the subsoil. There are occasional gullies. Infiltration is slow, runoff is rapid, and erosion is a hazard if the soil is not protected.

This soil is better suited to pasture than to field crops, but it is fairly good for field crops. Capability unit A3–IIIe–8; woodland suitability group 4.

Ora silt loam, 5 to 8 percent slopes (OaC).—This soil has stronger slopes and a thicker surface layer than Ora silt loam, 2 to 5 percent slopes, eroded, but it is similar in other respects. The soil is fairly good for field crops and timber, but it is better suited to pasture. Capability unit A3–IIIe–7; woodland suitability group 4.

Ora silt loam, 5 to 8 percent slopes, eroded (OaC2).—This soil is used the same as Ora silt loam, 5 to 8 percent slopes, and management is the same. Capability unit A3–IIIe–7; woodland suitability group 4.

Ora silt loam, 5 to 8 percent slopes, severely eroded (OaC3).—Most of the original surface layer of this soil has been lost through erosion. The present plow layer was formerly part of the subsoil. In places there are gullies. Runoff is rapid, and erosion is a hazard if the soil is not protected by a cover of plants.

This soil is used mainly for pasture or timber, but small areas are in field crops. Capability unit A3–IVe–9; woodland suitability group 4.

Ora and Ruston soils, 5 to 8 percent slopes, eroded (OrC2).—This is an undifferentiated unit containing Ora and Ruston soils. The Ora soil is moderately well drained and has a fragipan at a depth of about 21 to 24 inches. The Ruston soil is well drained and lacks a fragipan.

The Ora soil makes up about 60 percent of this unit, and the Ruston soil, about 40 percent. All of the acreage in some small areas is the Ora soil, and all of it in some other small areas is the Ruston soil. Most areas contain both of these soils.

The profile of the Ora soil is like the one described for Ora silt loam, 2 to 5 percent slopes, eroded, except for the texture of the surface layer. A typical profile of the Ruston loam contains the following layers:

0 to 10 inches, brown loam that grades, with increasing depth, to strong brown.
10 to 32 inches, yellowish-red, friable sandy clay loam; blocky structure.
32 to 50 inches, yellowish-red, very friable sandy loam.

These soils contain little organic matter. Infiltration is moderate in the Ora soil. Permeability is moderate down to the fragipan and slow in the fragipan. The available moisture-holding capacity is usually adequate for plants.

The Ruston soil is strongly acid and low in fertility. Infiltration is moderate, and permeability is moderate in the subsoil. The available moisture-holding capacity is moderate.

The soils in this unit have good tilth, are responsive to good management, and are suited to the crops commonly grown in the county. The slope is strong enough that runoff causes erosion to be a decided hazard when the soils are cultivated. Much of the acreage is used for crops and pasture, but a small acreage is in forest. Capability unit A3–IIIe–7; woodland suitability group 4.

Ora and Ruston soils, 2 to 5 percent slopes, eroded (OrB2).—These soils are mainly on small knolls in areas 3 to 10 acres in size. Some areas are used for cotton, corn, oats, and similar crops, and some are in pasture or idle. Capability unit A3–IIe–7; woodland suitability group 4.

Ora and Ruston soils, 5 to 8 percent slopes (OrC).—These soils have a thicker surface layer than Ora and Ruston soils, 5 to 8 percent slopes, eroded. In most places the surface layer is 8 to 10 inches thick. The soils are mainly in timber. Capability unit A3–IIIe–7; woodland suitability group 4.

Ora and Ruston soils, 5 to 8 percent slopes, severely eroded (OrC3).—These soils have lost most of their original surface layer through erosion, and the present plow layer consists of part of the former subsoil. There are a few gullies. Runoff is rapid and erosion is a hazard. The rate of infiltration is slow. Permeability ranges from slow to moderate, and the available moisture-holding capacity is moderate to moderately low.

These soils respond to good management, but great effort is required to develop and maintain high productivity. The soils are better suited to pasture or trees than to tilled crops. Capability unit A3–IVe–9; woodland suitability group 4.

Pheba Series

The Pheba series consists of somewhat poorly drained soils of uplands. The soils formed in coastal plain material. They have a surface layer of dark grayish-brown silt loam or loam and a subsoil of strong-brown clay loam. A mottled gray and yellowish-brown fragipan is at a depth of 13 to 17 inches. These soils are acid throughout. Slopes range from 2 to 5 percent.

The Pheba soils are associated with Ora and Ruston soils, but they are lighter colored than either the Ora or Ruston soils. Their fragipan is nearer the surface than that of the Ora soils, which have a fragipan at a depth of 20 to 24 inches.

The Pheba soils are in the southern part of the county. They occupy less than 1 percent of the acreage in the county. These soils are used for pasture, row crops, and timber. The native vegetation is mainly loblolly and longleaf pines, mixed hardwoods, and native grasses.

Pheba silt loam, 2 to 5 percent slopes, eroded (PhB2).—This somewhat poorly drained soil of uplands has a fragipan at a depth of about 14 inches. A typical profile contains the following layers:

0 to 6 inches, dark grayish-brown silt loam.
6 to 14 inches, strong-brown, friable clay loam; blocky structure.
14 to 40 inches, (pan) mottled yellowish-brown, pale-brown, and strong-brown, friable clay loam; blocky structure; material is hard and brittle in place; gray mottles become more numerous with increasing depth.
40 to 60 inches, mottled strong-brown, gray, and yellowish-brown, friable clay loam; blocky structure.

This soil contains little organic matter. The rate of infiltration is fairly slow. Permeability is moderate above the fragipan and slow in the fragipan. The available moisture-holding capacity is limited, and the soil is either too wet or too droughty most of the time. It is low in fertility and is strongly acid throughout.

This soil is suited to pasture, and most of it is used for that purpose. Its impaired drainage limits the use of the soil for field crops, but a small acreage is in oats or corn. Capability unit A3–IIIw–2; woodland suitability group 2.

Pheba silt loam, 2 to 5 percent slopes (PhB).—The surface layer of this soil is about 2 to 4 inches thicker than the surface layer of Pheba silt loam, 2 to 5 percent slopes, eroded. The soil is low in fertility and contains little organic matter. The available moisture-holding capacity is limited. The rate of infiltration is fairly slow. Permeability is moderate in the layers above the fragipan and slow in the fragipan.

This soil is mainly in loblolly and longleaf pines and mixed hardwoods. A small acreage is in pasture. Capability unit A3–IIIw–2; woodland suitability group 2.

Providence Series

The Providence series consists of moderately well drained soils of uplands. The soils formed in a mantle of loess that is only about 2 to 4 feet thick over friable coastal plain material. They have a surface layer of very dark gray to grayish-brown silt loam and a subsoil of strong-brown silty clay loam. A mottled brown and gray fragipan, at a depth of 20 to 26 inches, is underlain by clay loam, sandy loam, or loam. The soils are acid throughout. The slope ranges from 2 to 12 percent.

These soils are associated with the Bude, Ruston, Dulac, and Guin soils. They are better drained and deeper over the fragipan than the Bude soils. They are less red and not so well drained as the Ruston soils. In contrast to the Guin soils, which are gravelly throughout, the Providence soils are essentially free of gravel.

The Providence soils are on ridges. They make up about 32 percent of the county.

These soils are good for agriculture. They are used mainly for pasture, but some areas are in timber and field crops. The native vegetation is loblolly, shortleaf and longleaf pines, mixed hardwoods, and native grasses.

Providence silt loam, 2 to 5 percent slopes, eroded (PrB2).—This is a moderately well drained soil of the uplands. It contains a fragipan that is underlain by sandy material at a depth of about 23 inches. A typical profile contains the following layers:

0 to 7 inches, grayish-brown silt loam.
7 to 23 inches, strong-brown, friable silt loam grading with increasing depth to silty clay loam; blocky structure.
23 to 38 inches, (pan) strong-brown silt loam mottled with yellowish brown; brittle, but friable; blocky structure; mottling increases with increasing depth.
38 to 60 inches +, yellowish-red loam grading with increasing depth to red, firm sandy loam; coarse, blocky structure.

This soil is moderate in fertility and contains little organic matter. The rate of infiltration is fairly slow. Permeability is moderate above the fragipan and slow in the fragipan. In most places the available moisture-holding capacity is adequate for plants.

This soil is used to grow corn, cotton, oats, and similar crops. It is also used for pasture and timber. Erosion is a hazard if the soil is not protected by a cover of plants. Capability unit A7–IIe–5; woodland suitability group 4.

Providence silt loam, 2 to 5 percent slopes (PrB).—The surface layer of this soil is thicker than that of Providence silt loam, 2 to 5 percent slopes, eroded, but the two soils are used and managed the same. The surface layer of this soil is 8 to 10 inches thick. Capability unit A7–IIe–5; woodland suitability group 4.

Providence silt loam, 2 to 5 percent slopes, severely eroded (PrB3).—Erosion has removed most of the original surface layer of this soil, and the present plow layer consists of part of the former subsoil. In many places there are gullies. Infiltration is slow and runoff is rapid. The soil erodes readily if it is not protected.

This soil is used mainly for pasture and is better suited to that use than to tilled crops. It is fairly good for row crops, however, and a few areas are still cultivated. In addition, a large acreage, covered by native grasses, is idle. Capability unit A7–IIIe–9; woodland suitability group 4.

Providence silt loam, 5 to 8 percent slopes (PrC).—The surface layer of this soil is thicker than the surface layer of Providence silt loam, 2 to 5 percent slopes, eroded. In most places it is 8 to 10 inches thick.

This soil contains little organic matter. Permeability is moderate above the fragipan and slow in the fragipan. In most places the available moisture-holding capacity is adequate for plants. Erosion is a hazard if the soil is not protected by a cover of plants.

This soil is better suited to pasture and timber than to tilled crops. Capability unit A7–IIIe–4; woodland suitability group 4.

Providence silt loam, 5 to 8 percent slopes, eroded (PrC2).—This soil has a surface layer that in most places is 5 to 6 inches thick. In some small areas the present surface layer consists of material that was formerly part of the subsoil. The soil is used the same as Providence silt loam, 5 to 8 percent slopes, and its management is the same. Capability unit A7–IIIe–4; woodland suitability group 4.

Providence silt loam, 5 to 8 percent slopes, severely eroded (PrC3).—Erosion has removed most of the original surface layer of this soil, and the present plow layer consists of part of the former subsoil. In places there are occasional gullies. The hazard of further erosion is serious. Infiltration is slow and runoff is rapid.

This soil is better suited to pasture or timber than to cultivated crops, but small areas are cultivated. Capability unit A7–IVe–5; woodland suitability group 4.

Providence silt loam, 8 to 12 percent slopes, eroded (PrD2).—This soil is similar to Providence silt loam, 2 to 5 percent slopes, eroded, except for its stronger slope. In most places its surface layer is 5 to 6 inches thick. In some small areas the present surface layer consists of material that was formerly part of the subsoil.

This soil is better suited to pasture and timber than to tilled crops. Capability unit A7–IVe–6; woodland suitability group 4.

Providence silt loam, 8 to 12 percent slopes, severely eroded (PrD3).—Except for stronger slopes, this soil is similar to Providence silt loam, 5 to 8 percent slopes, severely eroded. The two soils are used and managed the same. Capability unit A7–IVe–5; woodland suitability group 4.

Ruston Series

The Ruston series consists of deep, well-drained soils of uplands. The soils formed in friable coastal plain material. They have a surface layer of sandy loam and a subsoil of yellowish-red sandy clay loam. The soils are acid throughout. The slope ranges from 8 to 35 percent.

These soils are associated with the Ora, Providence, Bude, and Guin soils. They are redder and better drained than the Ora soils and lack a fragipan. The Ruston soils are better drained than the Providence and Bude soils, have no fragipan, and formed in coastal plain material rather than in thin loess over coastal plain material. They lack the large amount of gravel that is present in the Guin soils. The Ruston soils are in the northwestern, eastern, and southeastern parts of the county.

These soils are better suited to pasture and timber than to field crops. The native vegetation is mainly loblolly and shortleaf pines, mixed hardwoods, and native grasses.

Ruston soils, 12 to 17 percent slopes (RuE).—These soils have steep slopes and consist of permeable, reddish, sandy material. A typical profile of a Ruston fine sandy loam contains the following layers:

0 to 12 inches, brown to yellowish-brown fine sandy loam or sandy loam.
12 to 26 inches, strong-brown sandy loam grading with increasing depth to red, friable sandy clay loam; blocky structure.
26 to 60 inches +, red, very friable sandy loam; weak, blocky structure in the upper few inches.

These soils are low in fertility and contain little organic matter. The rate of infiltration is moderate, permeability is rapid, and the soils have moderate available moisture-holding capacity. Surface runoff is medium. Erosion is a hazard if the soils are not protected by a cover of plants.

These soils are used mainly for mixed hardwoods and for loblolly and shortleaf pines. A small acreage is in pasture. Capability unit A3–VIe–1; woodland suitability group 7.

Ruston soils, 8 to 12 percent slopes (RuD).—Except for slope, these soils are similar to Ruston soils, 12 to 17 percent slopes. Like those soils, they are used chiefly for loblolly and shortleaf pines, mixed hardwoods, and pasture, but they have a larger acreage in pasture. Capability unit A3–IVe–1; woodland suitability group 7.

Ruston soils, 8 to 12 percent slopes, eroded (RuD2).—These soils have a surface layer that in most places is 5 to 6 inches thick. In some small areas the present surface layer consists of material that was formerly part of the subsoil. The soils are used the same as Ruston soils, 8 to 12 percent slopes, and their management is the same. Capability unit A3–IVe–1; woodland suitability group 7.

Ruston soils, 8 to 12 percent slopes, severely eroded (RuD3).—Erosion has removed most of the original surface layer of these soils, and the present plow layer consists of part of the former subsoil. In places there are occasional gullies. Surface runoff is rapid, and the hazard of erosion is serious. These soils are used about the same as Ruston soils, 12 to 17 percent slopes, and their management is similar. Capability unit A3–VIe–2; woodland suitability group 7.

Ruston soils, 12 to 17 percent slopes, eroded (RuE2).—These soils have a surface layer that in most places is 5 to 6 inches thick. In some small areas the present surface layer consists of material that was formerly part of the subsoil. The soils are used the same as Ruston soils, 12 to 17 percent slopes, and their management is the same. Capability unit A3–VIe–1; woodland suitability group 7.

Ruston soils, 12 to 17 percent slopes, severely eroded (RuE3).—Erosion has removed most of the original surface layer of these soils, and the present plow layer consists of part of the former subsoil. In places there are occasional gullies. Surface runoff is rapid, and the hazard of erosion is serious.

These soils are better suited to timber than to tilled crops. They were once cleared and used for field crops, but most of the acreage is now in forest. Capability unit A3–VIIe–1; woodland suitability group 7.

Ruston soils, 17 to 35 percent slopes (RuF).—Except for slope, these soils are similar to Ruston soils, 12 to 17 percent slopes. The rate of infiltration is moderate, and permeability is rapid. In most places the available moisture-holding capacity is adequate for plants. The soils contain little organic matter.

These soils are used mainly for mixed hardwoods and for loblolly and shortleaf pines. A small acreage is in pasture. Erosion is a hazard if the soils are not protected by a cover of plants. Capability unit A3–VIIe–1; woodland suitability group 7.

Ruston soils, 17 to 35 percent slopes, eroded (RuF2).—The surface layer of these soils, in most places, is 5 to 6 inches thick. In some small areas the present surface layer consists of material that was formerly part of the subsoil. The use of these soils is similar to that of Ruston soils, 17 to 35 percent slopes, and their management is about the same. Capability unit A3–VIIe–1; woodland suitability group 7.

Ruston soils, 17 to 35 percent slopes, severely eroded (RuF3).—Severe erosion has removed most of the original surface layer of these soils, and the present plow layer consists of part of the former subsoil. In places there are occasional gullies. The soils have more rapid runoff than Ruston soils, 17 to 35 percent slopes, but the use and management is similar. Capability unit A3–VIIe–1; woodland suitability group 7.

Sandy Alluvial Land

Sandy alluvial land consists of sandy alluvium that varies widely in texture and is generally stratified. It contains only a small amount of plant nutrients and is acid throughout.

Sandy alluvial land (Sa).—This miscellaneous land type consists of very sandy, stratified alluvium that is excessively drained. It lies directly below areas that are gullied and near areas of Collins and Falaya soils. Most of the acreage is in the northwestern part of the county along the Homochitto River and McCall Creek. Some areas are in the channels of these streams.

The soil material in this land type washed from areas of sandy coastal plain material mixed with a small amount of loess. Part of the soil material consists of undifferentiated, coarse debris that has been picked up from eroded areas by runoff water that flowed through deep gullies. The debris consists mainly of sand, silt, and gravel. It has been deposited on the alluvial plains, where it has penetrated the strata of coastal plain material under the thin layer of loess.

The texture near the surface of this land ranges from silt loam to gravelly sand. Gravel is common throughout the areas, and as much as 80 percent of certain layers is gravel. The slope ranges from 0 to 2 percent.

This land is low in fertility and contains little organic matter. Except where the soil material contains layers of silt, infiltration and permeability are very rapid.

The land is not suited to cultivated crops, but it is mainly in mixed hardwoods or has no vegetation growing on it (fig. 9). In some small areas bahiagrass and Coastal bermudagrass are grown for pasture, but fertilizer needs to be applied frequently for good yields. Capability unit A3–VIs–1.

Waverly Series

The Waverly series consists of poorly drained soils of bottom lands. The soils formed in sediments washed from the Providence and Bude soils. They have a surface layer of dark grayish-brown silt loam, and a subsoil of brownish-gray to light-gray silt loam. The soils are acid throughout. The slope ranges from 0 to 2 percent.

These soils are associated with the Collins and Falaya soils. They are more poorly drained than those soils and are grayer in the layers nearer the surface. The gleyed layer occurs at a depth of 6 to 10 inches in the Waverly soils, at a depth of 24 to 30 inches in the Col-

Figure 9.—**Area of Sandy alluvial land not suitable for crops.**

lins soils, and at a depth of 15 to 20 inches in the Falaya soils.

The Waverly soils are on bottoms along creeks in the county. They are also on flats, in depressions along hills or adjacent to hills, or out on the wide bottoms. The soils are used chiefly for pasture or mixed hardwoods, but a few small areas are in loblolly pines. The native vegetation was mixed hardwoods and native grasses.

Waverly silt loam (Wa).—This is a nearly level, poorly drained soil of the bottom lands. A typical profile contains the following layers:

0 to 6 inches, grayish-brown silt loam.
6 to 40 inches +, light-gray, friable silt loam with brown and yellow mottles that increase in number with increasing depth; small, dark, soft concretions are common.

This soil is low in fertility and contains little organic matter. The rate of infiltration is fairly slow. Permeability is moderate in the layers near the surface and slow to very slow in the substratum. Water does not move through the profile readily. The soil is wet during rainy periods and dry during dry periods. Drainage is a problem, and secondary V- or W-type ditches are needed to remove the excess water.

This soil is better suited to pasture and trees than to tilled crops. It is used mainly for pasture or is in mixed hardwoods, but a few small areas are still cultivated. Capability unit A7-IVw-1; woodland suitability group 8.

Formation, Classification, and Morphology of Soils

In this section the factors that have affected the formation and composition of the soils of Lincoln County are discussed. Also discussed is the classification of the soils by higher categories.

Factors of Soil Formation

Soils are the result of five major factors—climate, living organisms, parent material, topography (or physiography, relief, and drainage), and time. All five factors take part in the formation of the soil, but various ones dominate over the others.

In general, the most evident differences between the soils of two distant areas are probably caused by differences in the climate and type of native vegetation. Differences between adjacent soils in a small area are probably caused by differences in the parent material or in the topographic position. Thus, for every soil, the past combination of the five major factors is of the first importance to its present character.

Parent material

Parent material is the unconsolidated mass from which a soil develops. It is largely responsible for the chemical and mineralogical composition of the soils. In Lincoln County the parent material of most of the soils was coastal plain sediments and loess, but some of the soils formed in alluvium. In areas where the parent material consisted of coastal plain sediments, the sands and clays have formed in place in material laid down by the sea—the Citronelle formation (*2*). In areas where a thin layer of loess covered the Citronelle formation, the soils formed in loess and are silty.

The soils along the larger streams in the county formed in alluvium—material that has been transported and deposited by streams. Much of this alluvium originated from silty material, but some of it came from sand and clay of the coastal plain sediments.

The alluvial soils on old, high, stream terraces and benches have been in place long enough to have a well-developed profile. Those on first bottoms have a weakly developed profile; they still receive fresh deposits of soil material when floodwaters cover the areas. In addition, along drainageways throughout the county, there are narrow strips consisting of local alluvium that has been modified very little, if any, by the soil-forming processes.

Climate

Climate, as a genetic factor, affects the physical, chemical, and biological relationships in the soil primarily through the influence of precipitation and temperature. Water dissolves minerals, supports biological activity, and transports minerals and organic residues through the soil profile. The amount of water that actually percolates through the soil over a broad area is dependent mainly upon rainfall, relative humidity, and the length of the frost-free period. At a given point, the amount of downward percolation is also affected by physiographic position and by the permeability of the soil.

Temperature influences the kinds and growth of organisms. It also affects the speed of physical and chemical reactions in the soils. Microclimatic variations cause certain characteristics of the soils to differ from those of soils developed under the prevailing macroclimate.

Under the present-day climate in Lincoln County, the soils are moist. During most of the year, they are subject to leaching. Freezing and thawing in this county have had little effect on weathering and soil-forming processes. The average temperature is approximately 77° F. from about May 1 through October 30.

Plant and animal life

Micro-organisms are indispensable in the development of soils. Bacteria, fungi, and other micro-organisms help to weather rock and decompose organic matter. The larger plants serve to alter the soil microclimate, to furnish organic matter, and to transfer elements from the subsoil to the surface soil.

The kinds and numbers of plants and animals that live on and in the soil are determined in large part by the climate. They are also determined, to varying degrees, by the parent material, relief, and age of the soil.

Little is known about the fungi and other microorganisms in the soils of this county, except that they are mainly in the uppermost few inches of the soil profile. Earthworms and other small invertebrates are more active in the A_1 horizon than in the rest of the profile. In the A_1 horizon they carry on a slow, but continual, cycle of soil mixing. Mixing of the soil material by rodents does not appear to have been of much consequence in Lincoln County.

Except on the bottom lands, the native vegetation in this county was chiefly oak, hickory, loblolly pine, longleaf pine, and shortleaf pine. On the better drained areas of bottom lands, the trees were lowland hardwoods, chiefly yellow-poplar, sweetgum, ash, and oak. Cypress, birch, blackgum, beech, and oak trees that tolerate water grew mainly on the poorly drained areas of bottom lands.

Topography

Topography is largely determined by the characteristics of the formations underlying the soils, the geologic history of the general area, and the effects of dissection by rivers and streams. Topography influences the formation of soils through its effects on moisture relations, erosion, temperature, and the cover of plants. Its influence is modified by the other four factors of soil formation.

The soils in Lincoln County range in slope from 0 to 40 percent. The soils of the uplands, such as the Providence, Bude, and Ora, have thick, well-expressed profiles where their slope is less than 12 percent. In areas where the slope is 12 to 40 percent, the effects of topography tend to cause geological removal of the soil material almost as fast as the soils are formed. As a result, the soils of the Guin series and other soils that have strong slopes have a thin, weakly developed profile and characteristics of Regosols. Most of the soils formed in alluvium are level or nearly level.

Time

The length of time required for the development of soils depends largely on the other factors of soil formation. Less time is generally required for a soil to develop in a humid, warm area where vegetation is luxuriant than in a dry or cold area where the vegetation is scanty.

Geologically, the soils of Lincoln County are comparatively young. The coastal plain material was laid down by the sea during the Pliocene period. In some parts of the county, this coastal plain material was later covered by a thin mantle of loess during the ice age.

The age of the soils of Lincoln County varies considerably. Generally speaking, the oldest soils show a greater degree of horizon differentiation than the younger ones. On the smoother parts of the uplands, for example, and on the older stream terraces, the soils are mature. On the steeper slopes, however, geologic erosion has removed the soil material so rapidly that there has been less development of a profile. On the first bottoms and in areas of local alluvium, the soil material has been in place too short a time to allow the soil profile to reach maturity.

Classification and Morphology of Soils in Higher Categories

Soils are placed in narrow classes for the organization and application of knowledge about their behavior within farms or counties. They are placed in broad classes for study and comparison of large areas, such as continents. In the comprehensive system of soil classification followed in the United States (*5*), the soils are placed in six categories, one above the other. Beginning at the top, the six categories are: Order, suborder, great soil group, family, series, and type (*4*).

In the highest category, soils of the whole country are grouped in three orders, whereas thousands of soil types are recognized in the lowest category. The suborder and family have never been fully developed and thus have been little used. Attention has largely been given to the classification of soils into the types and series within counties or comparable areas and to the subsequent grouping of series into great soil groups and orders. The soil orders and great soil groups are discussed in this section. The soil series, types, and phases are discussed in the section "How Soils are Named, Mapped, and Classified."

In table 8 the soil series are classified by orders and great soil groups. Also in this table some of the factors that have contributed to the morphology of the soils are given.

Zonal soils

Zonal soils have well-developed characteristics that reflect the influence of the active factors of soil genesis, climate, and living organisms, chiefly vegetation. In the zonal order in Lincoln County is the Red-Yellow Podzolic great soil group.

RED-YELLOW PODZOLIC SOILS

This great soil group consists of well-developed, well-drained, acid soils formed under forest in a warm-temperate, humid to tropical climate. The soils have a thin, organic (A_0) horizon, an organic-mineral (A_1) horizon, and a light-colored, bleached (A_2) horizon. The A_2 horizon is underlain by a red, yellowish-red, strong-brown to brown, or yellow and more clayey (B_2) horizon. The parent material is more or less siliceous. Coarse, reticulate streaks or mottles of red, yellow, brown, and light gray are characteristic of the deep horizons (*5*).

In general, the soils of this group have a low cation exchange capacity and a low base saturation (commonly 15 to 20 percent). Kaolinite is the dominant clay mineral. The subsoil has moderate to strong, subangular blocky structure and colors of medium to high chroma.

TABLE 8.—*Soil series classified according to order and great soil group, and important characteristics of the soil series*

ZONAL

Great soil group and series	Parent material	Description	Drainage class	Slope range	Degree of profile development	Contrast between horizons
Red-Yellow Podzolic:						
1. Representative profile—				*Percent*		
Ruston	Sandy coastal plain material.	Very dark grayish-brown sandy loam over yellowish-red sandy clay loam; the sandy clay loam grades to sandy loam at a depth of 26 to 30 inches.	Well drained	2 to 35	Medium	Medium.
Boswell	Coastal plain clays	Light brownish-gray loam to sandy loam over yellowish-red clay subsoil; mottled gray, pale-brown, and red clay is at a depth of 10 to 20 inches.	Moderately well drained.	2 to 40	Medium	Strong.
2. Red-Yellow Podzolic intergrading toward Planosols—						
Providence	Thin mantle of silty material over coastal plain material.	Dark grayish-brown silt loam over a subsoil of strong-brown silty clay loam; a mottled brown, yellow, and gray fragipan is at a depth of 20 to 26 inches.	Moderately well drained.	2 to 12	Strong	Strong.
Ora	Sandy coastal plain material.	Dark grayish-brown silt loam over a subsoil of strong-brown to yellowish-red loam to clay loam; a mottled gray and brown loam fragipan is at a depth of 20 to 24 inches.	Moderately well drained.	2 to 8	Medium	Medium.
Dulac	Thin mantle of silty material over coastal plain clays.	Grayish-brown silt loam over a subsoil of strong-brown silty clay; a mottled brown and gray fragipan is at a depth of 18 to 24 inches; the fragipan is underlain by gray or mottled gray and red clay.	Moderately well drained.	2 to 8	Strong	Strong.
Freeland	Shallow, silty material over sandy coastal plain material.	Dark grayish-brown silt loam over a subsoil of brown silt loam; a mottled gray and brown fragipan is at a depth of 19 to 22 inches; the fragipan is underlain by loam or sandy loam.	Moderately well drained.	0 to 5	Medium	Strong.

INTRAZONAL

Great soil group and series	Parent material	Description	Drainage class	Slope range	Degree of profile development	Contrast between horizons
Planosols:						
Bude	Shallow, silty material over coastal plain material.	Very dark gray silt loam over a subsoil of strong-brown silty clay loam; a mottled gray and brown fragipan is at a depth of 15 to 19 inches.	Somewhat poorly drained.	0 to 8	Strong	Strong.
Hatchie	Shallow, silty material over coastal plain material.	Brown to dark-brown silt loam over a thin subsoil of silty clay loam; a mottled gray and brown silt loam fragipan is at a depth of 13 to 16 inches.	Somewhat poorly drained.	0 to 5	Medium to strong.	Strong.
Henry	Silt	Gray silt loam over a subsoil of light-gray silt loam; a mottled gray and yellow fragipan is at a depth of 10 to 14 inches.	Poorly drained	0 to 2	Weak	Weak.

TABLE 8.—*Soil series classified according to order and great soil group, and important characteristics of the soil series*—Continued

INTRAZONAL—Continued

Great soil group and series	Parent material	Description	Drainage class	Slope range	Degree of profile development	Contrast between horizons
				Percent		
Planosols—Continued						
Almo	Shallow, silty material over coastal plain material.	Dark grayish-brown silt loam over a subsoil of mottled light-gray and brown silt loam; a mottled gray and yellowish-brown fragipan is at a depth of 14 to 18 inches.	Poorly drained	0 to 2	Medium	Medium.
Pheba	Moderately fine coastal plain material.	Dark grayish-brown silt loam over a subsoil of strong-brown clay loam; a mottled yellow and brown clay loam fragipan is at a depth of 13 to 17 inches.	Somewhat poorly drained.	2 to 5	Medium	Medium.
Low-Humic Gley:						
Waverly	Recent silty alluvium.	Dark grayish-brown silt loam over light brownish-gray to gray silt loam at a depth of 6 to 10 inches; underlain by light-gray silt loam.	Poorly drained	0 to 2	Weak to none.	Weak.
AZONAL						
Regosols:						
Guin	Unconsolidated coastal plain sands and gravel.	Very dark grayish-brown gravelly sandy loam over gravelly sandy loam or loamy sand.	Well drained to excessively drained.	2 to 40	Weak	Weak.
Alluvial soils:						
Collins	Recent silty alluvium.	Dark grayish-brown to grayish-brown silt loam over brown and mottled gray and brown silt loam, at a depth of 19 to 24 inches.	Moderately well drained.	0 to 2	Weak to none.	Weak.
Falaya	Recent silty alluvium.	Grayish-brown to dark-brown silt loam over mottled gray and brown silt loam, at a depth of 15 to 20 inches.	Somewhat poorly drained.	0 to 2	Weak to none.	Weak.
uka	Recent sandy alluvium.	Brown to dark grayish-brown loam to sandy loam over brown loam; material mottled at a depth of about 20 to 30 inches.	Moderately well drained.	0 to 2	Weak to none.	Weak.

Most of the Red-Yellow Podzolic soils in Lincoln County have a dark-colored, but thin, A_1 horizon in which the content of organic matter ranges from about 1 to 2.5 percent. They also have a well-defined A_2 horizon that has a weak, granular or crumb structure and contains no more than 1 percent organic matter. The A_2 horizon is medium acid to strongly acid. The B_2 horizon contains more clay than the A_2. It has a moderate to strong, fine to medium, subangular blocky structure and is medium acid to strongly acid. The C horizon is mottled or reticulated red, yellow, and gray. The structure is less strong in the C horizon than in the B_2, and the proportion of clay is generally less.

In this county the Red-Yellow Podzolic soils are in the Ruston, Boswell, Providence, Ora, Dulac, and Freeland series. The Ruston soils are the most nearly representative of the Red-Yellow Podzolic soils in the county, and the Boswell soils are also typical. The Ora, Dulac, Providence, and Freeland soils are also in the Red-Yellow Podzolic great soil group. Because of the fragipan, however, they are considered to be intergrading toward the Planosol great soil group.

Ruston Series

The Ruston series consists of soils formed in coastal plain sands. The soils are on uplands. Their surface layer is very dark grayish brown, and their subsoil is yellowish-red sandy clay loam that grades to sandy loam at a depth of 26 to 30 inches. The slope ranges from 8 to 35 percent.

The following describes a profile of a Ruston loam about 6 miles southwest of Brookhaven near the Calvary Baptist Church (sec. 21, T. 6 N., R. 7 E.):

A_{1p} 0 to 4 inches, dark grayish-brown (10YR 4/2) loam; weak, fine, granular structure; friable; many fine roots; strongly acid; abrupt, smooth boundary.

A_{2p} 4 to 7 inches, brown (10YR 5/3) sandy loam; weak, fine, granular structure; friable; many fine roots; strongly acid; clear, smooth boundary.

B_1 7 to 10 inches, strong-brown (7.5YR 5/6) loam; weak, fine, granular, and weak, fine, subangular blocky structure; many fine roots; strongly acid; clear, smooth boundary.

B_2 10 to 32 inches, yellowish-red (5YR 5/6) sandy clay loam; moderate, fine and medium, subangular blocky structure; friable; few fine roots; few, small, quartz pebbles; strongly acid; clear, smooth boundary.

C 32 to 50 inches, yellowish-red (5YR 4/8) sandy loam; few, fine, faint mottles of brownish yellow (10YR 6/6); structureless; friable; strongly acid.

The texture of the surface layer ranges from silt loam or loam to sandy loam, and that of the B horizon, from clay loam or loam to sandy clay loam. The color of the C horizon ranges from yellowish red to red.

Boswell Series

The Boswell series consists of soils formed in coastal plain sands and clays. The soils are on uplands. They have a B_2 horizon of reddish clay that has subangular blocky to angular blocky structure. In many places the C horizon is structureless clay, mottled red and brownish yellow.

The following describes a profile of a Boswell loam 4 miles north of Heucks Retreat on a paved road, 1 mile east on a gravel road, in a wooded area on the south side of the road (sec. 24, T. 8 N., R. 8 E.):

A_1 0 to 3 inches, light brownish-gray (10YR 6/2) loam; weak, fine, granular structure; friable; numerous fine roots; strongly acid; abrupt, smooth boundary.

A_2 3 to 7 inches, very pale brown (10YR 7/4) loam; weak, fine, granular structure; friable; numerous fine roots; strongly acid; abrupt, smooth boundary.

B_1 7 to 10 inches, brownish-yellow (10YR 6/8) clay loam; weak, fine, subangular blocky structure; friable; numerous fine roots; strongly acid; abrupt, wavy boundary.

B_2 10 to 17 inches, yellowish-red (5YR 5/6) clay with common, fine, distinct mottles of red (2.5YR 4/8) and brownish yellow (10YR 6/6); moderate, fine and medium, angular blocky structure; slightly sticky; many fine roots; strongly acid; abrupt, smooth boundary.

B_{31} 17 to 26 inches, mottled light-gray (10YR 7/2), very pale brown (10YR 7/3), red (2.5YR 4/6), and brownish-yellow (10YR 6/6) clay; mottles are many, medium, distinct and prominent; strong, fine and medium, angular blocky structure; slightly sticky; few fine roots; very strongly acid; abrupt, smooth boundary.

B_{32} 26 to 56 inches +, mottled brownish-yellow (10YR 6/8), light-gray (10YR 7/2), and red (2.5YR 4/6) clay; mottles are many, medium, distinct and prominent; strong, medium and coarse, angular blocky structure; slightly sticky; very strongly acid.

The texture of the surface layer ranges from silt loam or loam to fine sandy loam, and the color of the surface layer, from light brownish gray to grayish brown. In some areas the B_2 horizon is free of mottles. Depth to the B_{31} horizon ranges from 14 to 20 inches.

Providence Series

The Providence series consists of soils of uplands formed in a thin mantle of loess over coastal plain material. The soils have slopes of 2 to 12 percent. They have a B_2 horizon of strong-brown silty clay loam that has subangular blocky structure. A fragipan is at a depth of 20 to 26 inches.

In these soils the texture of the D horizon ranges from sandy loam to clay loam, and in many places the material in the D horizon is structureless. These soils are classified as Red-Yellow Podzolic soils, but they are considered to be intergrading toward the Planosol great soil group because of the fragipan.

The following describes a profile of a Providence silt loam about 10 miles northeast of Brookhaven, Miss. (SW¼SE¼ sec. 10, T. 7 N., R. 9 E.):

A_{00} ½ inch to 0, hardwood leaves, pine needles, and native grass litter.

A_1 0 to 3 inches, very dark grayish-brown (10YR 3/1) silt loam; weak, fine to coarse, granular structure; friable; numerous fine grass roots; strongly acid; clear, smooth boundary.

A_2 3 to 7 inches, grayish-brown (10YR 5/2) silt loam; weak, fine, subangular blocky structure; friable; numerous fine roots; strongly acid; clear, smooth boundary.

B_1 7 to 9 inches, strong-brown (7.5YR 5/6) silt loam; weak, fine, subangular blocky structure; friable, slightly sticky; few root channels filled with light-gray (10YR 7/2) silt loam; numerous fine roots; strongly acid; clear, wavy boundary.

B_{21} 9 to 14 inches, strong-brown (7.5YR 5/6) heavy silt loam; weak, fine to medium, subangular blocky structure; friable, slightly sticky; numerous fine roots; strongly acid; clear, smooth boundary.

B_{22} 14 to 23 inches, strong-brown (7.5YR 5/6) silty clay loam; moderate, fine and medium, subangular blocky structure; friable, slightly sticky; many fine roots; common, fine, manganese coatings on the faces of peds in lower part of the horizon; strongly acid; clear, irregular boundary.

B_{3m1} 23 to 30 inches, strong-brown (7.5YR 5/6) heavy silt loam with common, medium, distinct mottles of light yellowish brown (10YR 6/4); moderate, medium, angular and subangular blocky structure; friable, slightly sticky; few fine roots; clay skins on the faces of peds; common, fine, manganese concretions; many fine pores; strongly acid; clear, smooth boundary.

B_{3m2} 30 to 38 inches, mottled yellow (10YR 7/6), light brownish-gray (2.5Y 6/2), and yellowish-red (5YR 4/6) silt loam; the mottles are common, fine and medium, distinct and prominent; moderate, fine and medium, angular blocky structure; slightly sticky; few fine roots; many fine pores; clay skins on the faces of peds; strongly acid; clear, wavy boundary.

D_{m1} 38 to 53 inches, yellowish-red (5YR 4/6) to dark reddish-brown (5YR 3/6) loam; few, fine, distinct mottles of light brownish gray (2.5Y 6/2); breaks to coarse, angular peds with few thin clay skins; firm to very firm; few fine roots; many, fine, manganese coatings on peds; light brownish-gray (2.5Y 6/2) coatings of silt on the faces of peds and in cracks; strongly acid; gradual, wavy boundary.

D_2 53 to 60 inches, red (2.5YR 4/6) sandy loam; few, fine, distinct mottles of light gray (10YR 7/2); structureless to weak, coarse, angular blocky structure; firm to very firm; large, gray, polygonal cracks with a high concentration of iron along their edges; strongly acid.

The color of the surface layer ranges from very dark grayish brown to grayish brown. In some areas the former subsoil is exposed, and in other places there has been no development of the B_{21} horizon. Depth to the fragipan ranges from 20 to 26 inches. The texture of the D horizon ranges from loam or sandy loam to clay loam. In places there is a gravelly fragipan in small areas of this soil.

Ora Series

The Ora series consists of soils formed in coastal plain material. The soils are on uplands. They have a B_2 horizon of yellowish-red heavy loam or sandy clay loam. The structure of the B_2 horizon is subangular blocky. A fragipan is at a depth of 20 to 24 inches. The C horizon is red and has a texture of sandy loam; the C horizon is structureless in many places. Although these soils are classified as in the Red-Yellow Podzolic great soil group, they are considered to be intergrading toward the Planosol great soil group because of the fragipan.

The following describes a profile of an Ora silt loam about 6 miles southwest of Brookhaven near the Calvary Baptist Church (sec. 21, T. 6 N., R. 7 E.):

A_p 0 to 6 inches, brown (10YR 5/3) silt loam; weak, fine, granular structure; friable; many fine roots; strongly acid; abrupt, smooth boundary.

B_1 6 to 9 inches, strong-brown (7.5YR 5/6) silt loam to loam; weak, fine, granular structure; friable; many fine roots; strongly acid; clear, smooth boundary.

B_2 9 to 21 inches, yellowish-red (5YR 5/6) heavy loam; moderate, fine and medium, subangular blocky structure; friable; few fine roots; strongly acid; clear, smooth boundary.

B_{3m1} 21 to 30 inches, yellowish-red (5YR 5/6) heavy loam with many, medium, distinct mottles of brownish yellow (10YR 6/6); strong, medium, subangular blocky structure; friable; few fine roots; few fine pores; strongly acid; clear, smooth boundary.

C 30 to 50 inches, red (2.5YR 4/6) sandy loam; a few, medium, distinct mottles of brownish yellow (10YR 6/8); structureless; friable; strongly acid.

The texture of the surface layer ranges from silt loam to loam or sandy loam. The color of the B_2 horizon ranges from strong brown to yellowish red, and the texture of the B_2 horizon, from loam to sandy clay loam. Depth to the fragipan ranges from 19 to 24 inches.

Dulac Series

The Dulac series consists of soils formed in a thin mantle of loess over coastal plain material. The soils are on uplands. They have a B_2 horizon of strong-brown silty clay loam and a fragipan at a depth of 18 to 24 inches. The structure of the B_2 horizon is subangular blocky. The D horizon is structureless clay. These soils are in the Red-Yellow Podzolic great soil group. Because of the fragipan, however, they are considered to be intergrading toward the Planosol great soil group.

The following describes a profile of a Dulac silt loam 3 miles northeast of Heucks Retreat on a black-top road, in a wooded area on the east side of the road (sec. 20, T. 8 N., R. 9 E.):

A_{00} 1½ inch to 0, pine needles.

A_p 0 to 6 inches, grayish-brown (10YR 5/2) to pale-brown (10YR 6/3) silt loam; weak, fine, granular structure; friable; common fine roots; few, fine or medium-sized quartz pebbles; strongly acid; clear, wavy boundary.

B_1 6 to 10 inches, brownish-yellow (10YR 6/6) silt loam; weak, fine, subangular blocky structure; friable; common fine roots; strongly acid; clear, wavy boundary.

B_2 10 to 18 inches, strong-brown (7.5YR 5/6) silty clay loam; moderate, fine and medium, subangular blocky structure; firm; many fine roots; strongly acid; clear, wavy boundary.

B_{3m1} 18 to 24 inches, mottled strong-brown (7.5YR 5/6), very pale brown (10YR 7/4), and red (2.5YR 5/6) silty clay loam; mottles are common, medium, and distinct or prominent; moderate, fine and medium, subangular blocky structure; firm; few fine roots; very strongly acid; clear, wavy boundary.

D_1 24 to 30 inches, yellowish-brown (10YR 5/8) silty clay; a few, fine, distinct, red (2.5YR 5/6) mottles; moderate to strong, medium, subangular blocky structure; firm; few fine roots; coating of light-gray (10YR 7/1) silt on the faces of peds; very strongly acid; abrupt, smooth boundary.

D_2 30 to 34 inches, mottled red (2.5YR 4/6), light brownish-gray (10YR 6/2), and brownish-yellow (10YR 6/8) clay; mottles are common, medium, and distinct or prominent; strong, fine and medium, angular blocky structure; firm; very strongly acid; clear, wavy boundary.

D_{3g} 34 to 55 inches, light-gray (10YR 6/1) to light brownish-gray (10YR 6/2) clay; common, medium, prominent mottles of red (2.5YR 4/6), and distinct mottles of brownish yellow (10YR 6/8); massive; firm, very hard, sticky and plastic; very strongly acid.

The color of the surface layer ranges from dark gray or grayish brown to pale brown, and that of the B_2 horizon, from yellowish brown to strong brown.

Freeland Series

The Freeland series consists of soils formed in silty loess and sandy coastal plain material. The soils are on stream terraces and have slopes of 0 to 5 percent. They have a B_2 horizon of brown to dark-brown silty clay loam that has subangular blocky structure. A fragipan is at a depth of 19 to 22 inches. The texture of the D_m horizon ranges from loam to sandy loam, and in many places the soil material in the D_m horizon is structureless. These soils are in the Red-Yellow Podzolic great soil group. Because of the fragipan, however, they are considered to be intergrading toward the Planosol great soil group.

The following describes a profile of a Freeland silt loam about 3 miles west of Caseyville, 1 mile south on a dirt road, in an idle field on the east side of the road (sec. 21, T. 8 N., R. 5 E.):

A_p 0 to 6 inches, dark grayish-brown (10YR 4/2) silt loam; weak, fine, granular structure; friable; many fine roots; strongly acid; abrupt, smooth boundary.

B_2 6 to 20 inches, brown to dark-brown (7.5YR 4/4) silty clay loam; moderate, fine and medium, subangular blocky structure; friable; many fine roots; few, fine, manganese coatings on the faces of peds in the lower part of horizon; strongly acid; clear, smooth boundary.

B_{3m1} 20 to 30 inches, mottled yellowish-brown (10YR 5/4), gray (10YR 6/1), and light yellowish-brown (10YR 6/4) heavy silt loam; mottles are common, fine, and distinct; weak, fine and medium, subangular blocky structure; friable; few fine roots; few, fine, soft, manganese concretions and manganese coatings on the faces of peds; strongly acid; clear, smooth boundary.

B_{3m2g} 30 to 41 inches, mottled yellowish-brown (10YR 5/4), gray (10YR 6/1), and light yellowish-brown (10YR 6/4) silt loam; mottles are common, medium, and distinct; moderate, fine and medium, subangular blocky structure; friable; few, fine, manganese concretions and manganese coatings on the faces of peds; strongly acid; clear, smooth boundary.

D_m 41 to 50 inches, brown to dark-brown (10YR 4/3) loam to sandy loam; common, fine, distinct mottles of light brownish gray (10YR 6/2) and pale brown (10YR 6/3); structureless; friable; strongly acid.

In some places the texture of the surface layer is loam. The texture of the B horizon ranges from silt loam to silty clay loam. The color of the B_2 horizon ranges from brown to strong brown. Depth to the fragipan ranges from 19 to 22 inches. In some places the texture of the D_m horizon is loam, but in other places it is sandy loam or clay loam.

Intrazonal soils

The intrazonal soils have more or less well-developed characteristics that reflect the dominating influence of some local factor of relief or parent material over the normal effects of climate and vegetation. The profiles of the intrazonal soils are more or less well developed. In Lincoln County the intrazonal order consists of the Planosol and the Low-Humic Gley great soil groups.

PLANOSOLS

Planosols have an eluviated surface horizon underlain by a B horizon that is more strongly illuviated, cemented, or compacted than the one in associated normal soils. The soils are in areas of nearly level uplands. They formed under grass or forest vegetation in a humid or subhumid climate. Podzolization and gleization were the soil-forming processes involved in their development. Characteristic of the Planosols is a well-defined layer of clay or cemented material. The clayey or cemented material has accumulated at various depths in nearly level to gently sloping areas, where drainage is more or less restricted.

In this county the Planosols have a fragipan at various depths. The fragipan is a very compact horizon, rich in silt or sand, or both, and in most places relatively low in clay. The fragipan is stronger in some soils than in others. It is composed of a mottled grayish, semicompact or compact layer that restricts the movement of water through the profile. Most of the fragipans in the soils of this county have a texture of silt loam to silty clay loam. In this county the Bude, Hatchie, Henry, Almo, and Pheba series are in the Planosol great soil group.

Bude Series

The Bude series consists of soils of uplands formed in a thin mantle of loess over sandy coastal plain material. The soils have a silt loam to silty clay loam fragipan that restricts the downward movement of water. The fragipan is mottled brown, yellow, and gray. In many places there are few to many dark-brown manganese concretions and some iron concretions on the surface and throughout the profile. The slope ranges from 0 to 8 percent.

The following describes a profile of a Bude silt loam 4 miles east of Brookhaven, Miss., on U.S. Highway No. 84, 1 mile south on a paved road, and 2 miles west on a gravel road to a crossroad, in the woods southwest of the crossroad (NW¼NE¼ sec. 11, T. 6 N., R. 8 E.):

A_{00} ½ inch to 0, mixed hardwood leaves, pine needles, and bluestem grass.

A_1 0 to 1 inch, very dark gray (10YR 3/1) silt loam; weak, medium, granular structure; friable; numerous fine grass roots; strongly acid; clear, smooth boundary.

A_2 1 to 4½ inches, pale-olive (5Y 6/3) silt loam; weak, fine, subangular blocky structure; friable; numerous fine roots and some tree roots; strongly acid; clear, smooth boundary.

B_1 4½ to 6 inches, light olive-brown (2.5Y 5/6) and olive (5Y 5/3) heavy silt loam; weak, fine, subangular blocky structure; friable; numerous fine roots; few tree roots; strongly acid; clear, smooth boundary.

B_{21} 6 to 10 inches, strong-brown (7.5YR 5/6) silty clay loam; weak, fine, subangular blocky structure; friable; few thin clay skins on the faces of peds; many grass roots; few tree roots; strongly acid; clear, smooth boundary.

B_{22} 10 to 13 inches, strong-brown (7.5YR 5/6) silty clay loam; common, fine, faint mottles of light yellowish brown (10YR 6/4); mottles are distinct when dry; weak, fine and medium, subangular blocky structure; friable; few thin clay skins on peds; few fine roots; few, fine, soft, iron concretions; strongly acid; clear, smooth boundary.

B_3 13 to 17 inches, yellowish-brown (10YR 5/6) heavy silt loam; common, fine, faint mottles of very pale brown (10YR 7/3); weak, fine and medium, subangular blocky structure; friable; few roots; many fine, soft, iron concretions; few fine voids; strongly acid; clear, smooth boundary.

B_{3m1} 17 to 28 inches, mottled dark-brown (7.5YR 4/4) to strong-brown (7.5YR 5/6), brown (10YR 5/3), and very pale brown (10YR 7/3) silty clay loam; mottles are common, fine and medium, and distinct; weak, thick, platy peds breaking to moderate, medium, subangular blocky structure; firm; few clay skins on the faces of peds; many iron-enriched spots; many voids; clear, smooth boundary.

BD_m 28 to 42 inches, mottled yellowish-brown (10YR 5/6), light yellowish-brown (10YR 6/4), and light brownish-gray (2.5Y 6/2) heavy silt loam; mottles are common, medium, and distinct; weak, thick, platy peds breaking to weak, medium, angular blocky structure; friable; few thin clay skins on the faces of peds; no roots; incipient iron concretions numerous; few, fine, manganese concretions; light brownish-gray (2.5Y 6/2) coatings of silt on the faces of peds and in cracks; many fine voids; strongly acid: gradual, wavy boundary.

D_m 42 to 51 inches, strong-brown (7.5YR 5/6) to yellowish-brown (10YR 5/6) silt loam; many, fine, faint mottles of light gray (10YR 7/2); structureless (massive); firm; few thin clay skins on the faces of peds; few manganese concretions; incipient iron concretions numerous; light-gray (10YR 7/2) coatings around peds and in cracks; many fine voids; strongly acid.

The texture of the B_2 horizon ranges from silt loam to silty clay loam. The color of the B_2 horizon ranges from yellowish brown to strong brown, and, in a few areas, to yellowish red. Depth to the fragipan ranges from 15 to 19 inches. The texture of the D_m horizon ranges from silt loam or sandy clay loam to clay loam, and depth to that horizon, from 35 to 48 inches.

Hatchie Series

The Hatchie series consists of soils formed in a thin mantle of loess over coastal plain material. The soils are on stream terraces. They have a silt loam to silty clay loam fragipan that is mottled gray, yellow, and brown. The fragipan restricts the downward movement of water. In many places there are few to many dark-brown manganese concretions on the surface and throughout the profile. The slope ranges from 0 to 5 percent.

The following describes a profile of a Hatchie silt loam in a pasture 9 miles west of Brookhaven on U.S. Highway No. 84, three-tenths of a mile north across McCall Creek (NE¼SE¼ sec. 29, T. 7 N., R. 6 E.):

A_p 0 to 6 inches, brown to dark-brown (10YR 4/3) silt loam; weak, fine, granular structure; friable; numerous fine roots; common, fine, soft, manganese concretions; strongly acid; abrupt, smooth boundary.

B_2 6 to 15 inches, strong-brown (7.5YR 5/6) heavy silt loam to light silty clay loam; common, fine, faint mottles of yellowish brown (10YR 5/6) in lower part of the horizon; moderate, fine, subangular blocky structure; friable; common fine roots; few, fine, manganese concretions; root holes and worm holes filled with material from the A_p horizon; strongly acid; clear, smooth boundary.

B_{3m1} 15 to 24 inches, mottled light-gray (10YR 7/2), strong-brown (7.5YR 5/6), and yellowish-brown (10YR 5/6) silt loam; mottles are many, medium, and distinct; weak, fine, subangular blocky structure; many, fine and medium, iron and manganese concretions; strongly acid; clear, smooth boundary.

B_{3m2} 24 to 31 inches, mottled light brownish-gray (10YR 6/2), strong-brown (7.5YR 5/6), and light-gray (10YR 7/2) silt loam; mottles are common, medium, and distinct; moderate, fine and medium, subangular blocky structure; friable; common, fine and medium, iron and manganese concretions; strongly acid; clear, smooth boundary.

B_{3m3} 31 to 40 inches, mottled dark-brown (10YR 4/3), yellowish-brown (10YR 5/6), and light-gray (10YR 7/2) silt loam (has high content of sand); mottles are common, medium, and distinct; moderate, fine and medium, subangular blocky structure; friable; few, fine, iron and manganese concretions; manganese coatings on the faces of peds; strongly acid; gradual, smooth boundary.

D 40 to 50 inches, strong-brown (7.5YR 5/8) loam; common, fine, distinct mottles of very pale brown (10YR 7/3); moderate, fine and medium, subangular blocky structure; friable; few, fine, manganese and iron concretions; few small pebbles; very strongly acid.

In most places the texture of the surface layer is silt loam, but in some places, where there is a thin overwash, the texture is loam. The color of the B_2 horizon ranges from yellowish brown to strong brown, and the texture of the B_2 horizon, from silt loam to silty clay loam. The texture of the D horizon ranges from loam or silt loam to clay loam. Depth to the fragipan ranges from 13 to 16 inches. The amount of concretionary material varies.

Henry Series

The Henry series consists of soils formed in a thin mantle of loess over coastal plain material. The soils are on flats or in depressions in the uplands and have slopes of 0 to 2 percent. They have a mottled gray and yellow fragipan. The fragipan has a texture of silt loam to silty clay loam. In many places there are manganese concretions throughout the profile.

The following describes a profile of a Henry silt loam behind the New Hope Church, about 4 miles north of Brookhaven, Miss. (sec. 25, T. 8 N., R. 7 E.):

A_0 1 inch to 0, forest litter.

A_{21g} 0 to 5 inches, light-gray (10YR 7/2) silt loam, common, fine, distinct mottles of yellowish brown (10YR 5/8); weak, fine, granular to weak, thick, platy structure; friable; common fine roots; strongly acid; clear, smooth boundary.

A_{22g} 5 to 9 inches, light-gray (10YR 7/2) silt loam; common, fine, distinct mottles of yellowish brown (10YR 5/8); weak, thick, platy structure; friable; few fine roots; very strongly acid; clear, smooth boundary.

B_{2g} 9 to 13 inches, light-gray (10YR 7/1) silt loam; many, fine, distinct mottles of yellowish brown (10YR 5/8); weak, fine and medium, subangular blocky structure; friable, slightly plastic; few fine roots; common, fine, iron and manganese concretions; brownish-yellow (10YR 6/6) root stains throughout the horizon; very strongly acid; clear, smooth boundary.

B_{3mg1} 13 to 18 inches, light-gray (10YR 7/1) heavy silt loam; common, fine, distinct mottles of yellow (10YR 7/8); moderate, fine and medium, subangular blocky structure; slightly plastic; common, fine, iron and manganese concretions; few fine roots; few fine voids; very strongly acid; clear, smooth boundary.

B_{3mg2} 18 to 23 inches, light-gray (10YR 7/1) heavy silt loam; common, fine, distinct mottles of yellow (10YR 7/6); moderate, fine, subangular blocky structure; firm, slightly plastic, and slightly sticky; few, fine, iron and manganese concretions; many fine voids; very strongly acid; abrupt, smooth boundary.

C_g 23 to 44 inches, gray (10YR 5/1) silty clay loam; common, fine, distinct mottles of light yellowish brown (10YR 6/4) and yellowish brown (10YR 5/6); moderate, fine and medium, subangular blocky structure; firm, plastic and slightly sticky; few iron and manganese concretions; very strongly acid.

The texture of the B horizon ranges from silt loam to silty clay loam, and that of the C_g horizon, from silty clay loam to clay loam. Depth to the fragipan ranges from 10 to 14 inches, and depth to the C horizon, from 20 to 40 inches.

Almo Series

The Almo series consists of soils formed in a thin mantle of loess over coastal plain material. The soils have a silt loam to silty clay loam fragipan that is mottled gray and yellow. In many places there are manganese concretions throughout the profile. These poorly drained soils are on terraces and have slopes of 0 to 2 percent.

The following describes a profile of Almo silt loam 8 miles south of Brookhaven, Miss., on U.S. Highway No. 51, in a wooded area near Big Creek (sec. 36, T. 6 N., R. 7 E.):

A_1 0 to 2 inches, dark grayish-brown (10YR 4/2) silt loam: weak, fine, granular structure; friable; many fine roots; strongly acid; abrupt, smooth boundary.

B_{2g} 2 to 16 inches, mottled light-gray (10YR 7/2) and yellowish-brown (10YR 5/4) silt loam; mottles are common, fine, and distinct; weak, fine, subangular blocky structure; friable; few fine roots; few, fine, soft, iron and manganese concretions; strongly acid; clear, smooth boundary.

B_{3m1g} 16 to 30 inches, mottled gray (10YR 6/1) and brownish-yellow (10YR 6/6) heavy silt loam; mottles are common, medium, and distinct; weak, fine, subangular blocky structure; friable; few fine roots; common, fine, soft, manganese and iron concretions; strongly acid; clear, smooth boundary.

B_{3m2g} 30 to 42 inches, mottled gray (10YR 6/1) and yellowish-brown (10YR 5/8) silty clay loam; mottles are common, medium, and distinct; moderate, fine and medium, subangular blocky structure, and fine, angular blocky structure; common, medium, soft, manganese and iron concretions; clay skins on the faces of peds; strongly acid; clear, smooth boundary.

D_m 42 to 49 inches, yellowish-brown (10YR 5/4) clay loam; few, medium, distinct mottles of light brownish gray (10YR 6/2); structureless; friable; common, medium, soft, manganese and iron concretions; strongly acid.

The texture of the surface layer is silt loam or loam, and the color of the surface layer ranges from dark grayish brown to dark brown. The texture of the B_{2g} horizon ranges from silt loam to a light silty clay loam. The texture of the D horizon ranges from clay loam or sandy clay loam to sandy loam. Pockets or thin lenses of sand occur in places in the B_{2g} or B_{3m1g} horizons. Depth to the fragipan ranges from 14 to 18 inches.

Pheba Series

The Pheba series consists of soils formed on uplands in coastal plain material. The soils have a light clay loam to loam fragipan that is mottled yellow, gray, and brown. In many places there are manganese concretions throughout the profile. The slope ranges from 2 to 5 percent.

The following describes a profile of a Pheba silt loam in a pasture, 1 mile southeast of Ruth, Miss., on the north side of a paved road (sec. 28, T. 5 N., R. 9 E.):

A_p 0 to 6 inches, dark grayish-brown (10YR 4/2) silt loam; weak, fine, granular structure; friable; common fine roots; strongly acid; abrupt, smooth boundary.

B_2 6 to 14 inches, strong-brown (7.5YR 5/6) light clay loam; few, fine, faint mottles of yellowish brown (10YR 5/6) in the lower part of the horizon; moderate, fine and medium, subangular blocky structure; friable; slightly hard, slightly plastic; common fine roots and root holes; few, fine, iron and manganese concretions; strongly acid; abrupt, smooth boundary.

B_{3m1} 14 to 22 inches, mottled yellowish-brown (10YR 5/6), pale-brown (10YR 6/3), and strong-brown (7.5YR 5/6) light clay loam; mottles are many, fine, and distinct; moderate, fine and medium, subangular blocky structure; friable; hard, slightly plastic; few fine roots; common, fine, iron and manganese concretions; strongly acid; clear, smooth boundary.

B_{3m2} 22 to 40 inches, mottled brownish-yellow (10YR 6/6), gray (10YR 6/1), and yellowish-red (5YR 5/6) clay loam; mottles are many, medium, distinct and prominent; moderate, medium, subangular blocky structure; friable; hard, slightly plastic; few, fine, manganese concretions; clay skins on the faces of peds; strongly acid; clear, wavy boundary.

C 40 to 60 inches, mottled strong-brown (7.5YR 5/6), gray (10YR 6/1), and light yellowish-brown (10YR 6/4) clay loam; mottles are many, fine, and distinct; strong, medium and coarse, angular and subangular blocky structure; clay skins on the faces of peds; strongly acid.

The texture of the surface layer is loam or silt loam. The color of the B_2 horizon ranges from yellowish brown to strong brown, and the texture of the B_2 horizon, from light clay loam to loam. Depth to the fragipan ranges from 13 to 17 inches.

LOW-HUMIC GLEY SOILS

The Low-Humic Gley great soil group consists of imperfectly drained to poorly drained soils that have a very thin surface layer that is moderately high in organic matter. Below the surface layer are mottled gray and brown, gleyed mineral horizons. The soils developed as the result of gleization. The texture is essentially the same throughout the profile. The Waverly series is the only member of the Low-Humic Gley great soil group in Lincoln County.

Waverly Series

The Waverly series consists of soils formed in recent alluvium derived from loess. The soils are on bottoms in slack water areas and have slopes of 0 to 2 percent. Their A horizon is thin and is a dark grayish-brown silt loam. Below the A horizon, at a depth of 5 to 7 inches, are light grayish-brown, gleyed horizons that have a texture of silt loam. At a greater depth in the profile, the soil material is mottled gray and brown silt loam.

The following describes a profile of a Waverly silt loam 1 mile north of Brookhaven on U.S. Highway No. 51, in a wooded area northwest of the Lincoln County Livestock Sales Barn (sec. 1, T. 7 N., R. 7 E.):

A_{p1} 0 to 2 inches, dark grayish-brown (10YR 4/2) silt loam; common, fine, faint mottles of light brownish gray (10YR 6/2); weak, fine, crumb structure; friable; common, fine and medium roots; strongly acid; clear, smooth boundary.

A_{p2} 2 to 6 inches, grayish-brown (10YR 5/2) silt loam; many, medium, distinct mottles of brown (7.5YR 4/4); weak, fine, crumb structure; friable; common, fine and medium roots; strongly acid; abrupt, smooth boundary.

C_{1g} 6 to 15 inches, light brownish-gray (10YR 6/2) silt loam; many, fine mottles of brown (7.5YR 4/4) and few, fine, faint mottles of dark grayish brown (10YR 4/2); weak, fine, crumb structure; friable; few fine roots; common, coarse, manganese coatings and common, fine, soft, manganese concretions; strongly acid; clear, smooth boundary.

C_{2g} 15 to 25 inches, light-gray (10YR 7/2) silt loam; many, fine and medium, distinct mottles of brown (10YR 5/3); structureless; slightly sticky; friable; few fine roots; common, fine, soft, manganese concretions; strongly acid, clear, smooth boundary.

C_{3g} 25 to 40 inches, light-gray (10YR 7/1) silt loam; many, fine and medium, distinct mottles of brownish yellow (10YR 6/6) and brown to dark brown (10YR 4/3); structureless; slightly plastic; common, fine, manganese concretions; strongly acid.

The color of the surface layer ranges from dark grayish brown to light brownish gray. The texture of the C horizons ranges from silt loam to light silty clay loam. Depth to the C_{1g} horizon ranges from 5 to 9 inches.

Azonal soils

The azonal order consists of soils that, because of their youth, the kind of parent material, or relief, have little or no development of the soil profile. In this county the Regosols and Alluvial soils are in the azonal order.

REGOSOLS

The Regosols are an azonal group of soils in which clearly expressed soil characteristics have not developed. The soils have formed in deep deposits of unconsolidated or soft rock. Their parent material includes recent sand dunes, as well as loess and glacial drift in the steeply sloping areas (*4*). In Lincoln County the Regosols formed in unconsolidated deposits of coastal plain sediments. The only series in this great soil group is the Guin.

Guin Series

The Guin series consists of soils formed in sand and gravel of the Coastal Plain. These soils are on uplands and are excessively drained to well drained. Erosion and the steepness of the slope have overbalanced the natural processes of soil formation in the areas. As a result, these soils show little profile development.

The surface layer of the Guin soils ranges from very dark grayish-brown gravelly sandy loam to brown or yellowish-brown gravelly sandy loam. The C horizons are reddish-yellow or yellowish-red gravelly sandy loam. The amount of gravel in the profile varies. The slope ranges from 8 to 40 percent.

The following describes a profile of a Guin gravelly sandy loam in a moist, wooded area 8 miles east of Brookhaven, Miss., along U.S. Highway No. 84, 2 miles south on a gravel road, and 1 mile east on the north side of the road (sec. 5, T. 6 N., R. 9 E.):

A_1 0 to 5 inches, very dark grayish-brown (10YR 3/2) gravelly sandy loam; weak, fine, granular structure; very friable; common fine roots; few small pebbles; strongly acid; clear, wavy boundary.

A_2, A_3 5 to 10 inches, brown (10YR 4/3) to dark yellowish-brown (10YR 4/4) gravelly sandy loam; structureless; very friable; common fine roots; common fine pebbles; strongly acid; clear, wavy boundary.

C_1 10 to 15 inches, dark yellowish-brown (10YR 4/4) gravelly sandy loam; structureless; very friable; few fine roots; pebbles of various sizes make up about 40 percent of the soil material by volume; strongly acid; clear, wavy boundary.

C_2 15 to 41 inches, reddish-yellow (7.5YR 6/6) gravelly sandy loam; structureless; very friable; few fine roots; pebbles of various sizes make up 50 to 65 percent of the soil material by volume; strongly acid; clear, wavy boundary.

C_3 41 to 60 inches +, yellowish-red (5YR 4/8) gravelly sandy loam; structureless; very friable; pebbles of various sizes make up 60 to 70 percent of the soil material by volume; strongly acid.

The color of the surface layer ranges from brown to very dark grayish brown, and that of the C horizons, from dark yellowish brown to strong brown or yellowish red. The texture throughout the profile ranges from gravelly sandy loam to gravelly sandy clay loam or gravelly loamy sand. The number and size of the pebbles vary in the horizons.

ALLUVIAL SOILS

The Alluvial great soil group consists of soils formed in material that was transported by water and recently deposited. This material has not been modified or has been only slightly modified by the factors of soil formation. In this county the soils of the Alluvial great soil group are the Collins, Falaya, and Iuka.

Collins Series

The Collins series consists of moderately well drained soils of bottom lands. The soils formed in silty alluvial sediments washed from areas underlain by loess. They have a surface layer of grayish-brown to dark grayish-brown silt loam and upper C horizons that are dark brown. The structure of these soils ranges from weak, fine, granular to structureless. The gleyed horizon is mottled gray, light yellowish brown, and dark yellowish brown. This horizon is at a depth of 30 to 50 inches, but some effects of gleization are apparent at a depth of 22 to 30 inches.

The following describes a profile of a Collins silt loam west of Bogue Chitto, Miss., one-half mile on a paved road, 1 mile north on a paved road on the north side of Big Creek (sec. 35, T. 6 N., R. 7 E.):

A_p 0 to 3 inches, grayish-brown (10YR 5/2) silt loam; few, fine, faint mottles of light grayish brown (10YR 6/2); weak, fine, granular structure; friable; many fine roots; strongly acid; abrupt, smooth boundary.

A_{p2} 3 to 7 inches, dark grayish-brown (10YR 4/2) silt loam; weak, fine, granular structure; friable; many fine roots; strongly acid; clear, smooth boundary.

C_1 7 to 22 inches, brown to dark-brown (7.5YR 4/4) silt loam; weak, fine, granular structure; friable; common fine roots; strongly acid; clear, smooth boundary.

C_2 22 to 30 inches, brown to dark-brown (7.5YR 4/4) silt loam; many, fine, distinct to prominent mottles of light brownish gray (10YR 6/2); structureless; friable; few fine roots; few, soft, manganese concretions; strongly acid; clear, smooth boundary.

C_{3g} 30 to 50 inches, mottled light-gray (10YR 7/2), light yellowish-brown (10YR 6/4), and dark yellowish-brown (10YR 4/4) silt loam; mottles are common, fine, and distinct; structureless; friable; many, fine, soft, iron and manganese concretions; strongly acid.

The color of the surface layer ranges from dark brown or grayish brown to yellowish brown, and that of the C_1 horizon, from brown or dark brown to dark yellowish brown. Depth to the C_{3g} horizon ranges from 25 to 32 inches. In places grayish mottles occur at a depth of 19 to 24 inches.

Falaya Series

The Falaya series consists of somewhat poorly drained soils of bottom lands. The soils formed in silty alluvial sediments washed from areas where the soils formed in loess. The surface layer of the Falaya soils is grayish-brown to dark-brown silt loam. The color of the upper C horizon is brown to dark brown or dark yellowish brown. In some places the soil material is structureless, but in other places there is a weak structure in the A horizon. The gleyed horizon is gray to light grayish brown and has a texture of silt loam.

The following describes a profile of a Falaya silt loam in a pasture north of Brookhaven, 1 mile on a gravel road, behind the Lincoln County Livestock Sales Barn (sec. 1, T. 7 N., R. 7 E.):

A_{p1} 0 to 1 inch, dark-brown (10YR 4/3) silt loam; many, fine, distinct mottles of light gray (2.5Y 7/2); weak, fine, crumb and granular structure; friable; many fine roots; medium acid; clear, smooth boundary.

A_{p2} 1 to 6 inches, brown to dark-brown (10YR 4/3) silt loam; common, fine, distinct mottles of grayish brown (10YR 5/2); weak, fine, crumb and granular structure; friable; few, soft, manganese concretions; common fine roots; medium acid; clear, smooth boundary.

C_1 6 to 11 inches, dark-brown (7.5YR 3/2) silt loam; common, fine, faint mottles of grayish brown (10YR 5/2); weak, fine, granular structure; friable; common fine roots; few, fine, soft, manganese concretions; strongly acid; clear, smooth boundary.

C_2 11 to 14 inches, brown to dark-brown (10YR 4/3) silt loam; many, fine, distinct mottles of pale yellow (2.5Y 7/4); weak, fine, granular structure; friable; few, fine, soft, manganese concretions; few fine roots; strongly acid; clear, smooth boundary.

C_3 14 to 20 inches, mottled dark yellowish-brown (10YR 3/4), pale-brown (10YR 6/3), and light-gray (2.5Y 7/2) silt loam; mottles are many, fine and medium, and distinct; weak, fine, granular structure; slightly sticky; friable; few, fine, soft, manganese concretions; strongly acid; clear, smooth boundary.

C_{4g} 20 to 44 inches, light brownish-gray (10YR 6/2) silt loam; common, medium, distinct mottles of brown to dark brown (10YR 4/3); structureless; friable; common, fine, soft, iron and manganese concretions; strongly acid.

The color of the surface layer ranges from dark brown to grayish brown. Depth to the gleyed horizon ranges from 15 to 20 inches.

Iuka Series

The Iuka series consists of soils formed in sandy alluvium derived from coastal plain material. The soils are on bottom lands and are moderately well drained. The texture ranges from sand to silt throughout the profile. In many places the soils are gleyed at a depth of 20 to 30 inches. These soils are generally structureless, though in some places a weak structure has formed in the A horizon.

The following describes a profile of an Iuka loam on Zeno Smith's farm, 3 miles beyond McCall Creek on Zetus road, and 3 miles south (sec. 28, T. 7 N., R. 6 E.):

A_p 0 to 5 inches, brown (10YR 4/3) loam; weak, fine, granular structure; friable; many fine roots; strongly acid; clear, smooth boundary.

C_1 5 to 9 inches, dark grayish-brown (10YR 4/2) loam; weak, fine, granular structure; friable; many fine roots; strongly acid; clear, smooth boundary.

C_2 9 to 20 inches, brown (10YR 4/2) sandy loam; few, fine, faint mottles of grayish brown (10YR 5/2); structureless; friable; few fine roots; strongly acid; clear, smooth boundary.

C_3 20 to 30 inches, grayish-brown (10YR 5/2) loam to sandy loam; common, medium, distinct mottles of light gray (10YR 7/2); structureless; friable; few fine roots; strongly acid; clear, smooth boundary.

C_4 30 to 47 inches, mottled light-gray (10YR 7/2) and yellowish-brown (10YR 5/3) very fine sandy loam; mottles are many, fine, and distinct; structureless; friable; strongly acid.

The texture of the surface layer in most places is loam to sandy loam, but in some areas it is loamy sand to sand. In some places the surface layer is stratified silt loam and sand. The texture of the other horizons ranges from loam or sandy loam to loamy sand. In many places the C_2 horizon is brown to dark brown.

Additional Facts About the County

This section is primarily for those not familiar with the county. It describes the early history and development of the county and the drainage, water supplies, and climate. The section also discusses the public facilities, industries, and transportation, and gives facts about the agriculture.

Early History and Development

Lincoln County was formed in 1870 from parts of two older counties—Franklin and Lawrence. Brookhaven, which had been established earlier, was made the county seat.

The town of Brookhaven was originally located on the banks of the stream now known as the east prong, or branch, of the Bogue Chitto River. Later, it was moved 1½ miles north to its present location. The town had a population of 9,885 in 1960, and the county had a population of 26,759.

Drainage and Water Supplies

Lincoln County has parts of four major watersheds—the Amite River, Pearl River, Buffalo-Homochitto River, and Bayou Pierre Creek. All but the Pearl River have their headwaters in the county.

Within the county, other streams in the four major watersheds are Fair River, McCall Creek, Beaver Creek, Hurricane Creek, Sassers Mill Creek, Big Creek, Panther Creek, Lazy Creek, Topisaw Creek, Boone Creek, Jordan Creek, Little Bahala Creek, and Cedar Creek.

The surface drainage system of this county is approaching maturity, but a few small areas in the uplands still do not have channels to provide surface drainage. The bottom lands along streams are flooded occasionally, but the floodwaters remain for only a short time. Small dragline ditches and V- and W-type ditches are used to dispose of excess water that flows onto the bottom lands from the uplands.

Power pumps and wells supply most of the water for homes in the communities. Streams and ponds are the main source of water for livestock, but in some places water is pumped from wells.

The city of Brookhaven has 6 wells, each 150 feet deep, that have been drilled through 50 feet of sand. These wells supply as much as 500 gallons per minute.

Climate

The climate of Lincoln County is determined more by its subtropical latitude, the extensive land mass to the north, and the proximity of the warm waters of the Gulf of Mexico to the south than by topography. Local differences, caused by differences in topography, are only minor. Table 9, compiled from records of the U.S. Weather Bureau at Brookhaven, gives figures for temperatures and precipitation typical of those prevailing in the county.

In summer the prevailing winds from the south cause the climate to be moist and warm. Occasionally, however, the distribution of atmospheric pressure is such that winds from the west or north blow into the area and cause the weather to be hot and dry. If the hot, dry periods are prolonged, severe droughts may develop. The most widespread droughts occurred in 1924, 1952, and 1954.

In winter the county is subjected alternately to an influx of moist air from tropical areas and of dry air from much colder areas. The change from one to the other causes sudden, extensive variations in temperature. Cold periods are usually of short duration.

TABLE 9.—*Temperature and precipitation at Brookhaven, Lincoln County, Miss.*

[Elevation, 480 feet]

Month	Temperature [1]			Precipitation [2]			
	Average	Absolute maximum	Absolute minimum	Average	Driest year (1952)	Wettest year (1923)	Average snowfall
	°F.	°F.	°F.	Inches	Inches	Inches	Inches
December	50.4	85	6	6.08	5.28	9.95	0.1
January	49.8	85	2	5.49	3.41	2.87	.5
February	52.0	86	−10	5.27	3.85	6.84	.3
March	59.1	92	17	5.25	2.86	8.75	(3)
April	65.8	96	27	5.42	3.01	16.16	0
May	73.1	102	38	4.84	6.06	9.53	0
June	79.9	106	50	4.44	.48	5.44	0
July	81.8	105	56	5.57	3.76	10.74	0
August	81.4	106	56	4.67	1.69	5.65	0
September	77.3	106	38	3.22	1.44	3.73	0
October	67.0	99	25	3.02	.05	.96	0
November	56.9	89	17	3.92	4.27	5.01	(3)
Year	66.2	106	−10	57.19	36.16	85.63	0.9

[1] Average temperature based on a 68-year record, through 1955; highest and lowest temperatures on a 59-year record, through 1952.
[2] Average precipitation based on an 81-year record, through 1955; wettest and driest years based on a 67-year record, in the period 1874–1955; snowfall based on a 59-year record, through 1952.
[3] Trace.

In Lincoln County the relative humidity is 60 or higher for 72 percent of the time and below 40 for only 8 percent of the time. When the temperature is 90° F. or higher, the relative humidity never exceeds 79, but it is between 50 and 79 for about 42 percent of the time. Even when the temperature is low, the relative humidity is generally high. In 48 percent of the hours when the temperature is below 50° F., the relative humidity is 50 to 79. In 40 percent of the hours when the temperature is below 50°, the relative humidity is between 80 and 100.

Temperatures of 32° F. or lower occur on an average of 34 days per year, and temperatures of 90° or higher, on an average of 96 days per year. Temperatures of 90° or higher occur in about 10 percent of the hours from May through October, and temperatures of 80° or higher occur in about 36 percent of the hours from May through October. During the months of November through April, temperatures of 70° or higher occur in about 16 percent of the hours, and temperatures of below 50° occur in about 30 percent of the hours. Temperatures of 20° or lower occur in 3 out of 4 winters.

There is a 50 percent chance of a freeze after March 15 in spring and before November 11 in fall. The length of the average frost-free period, between the date of the last frost in spring and the first in fall, is 239 days. There is a 20 percent chance of a freeze after March 30 in spring and before November 1 in fall.

In general, there are two wet seasons and two dry seasons during the year. Winter and spring are usually wet, but summer and fall are usually dry. Fall is the driest season of the year. This is beneficial for farming because crops can be harvested without delay. Heavy rains in winter and early in spring supply enough moisture for spring planting, which generally makes good headway during the drier spring months.

The amount of rainfall in summer decreases with increasing distance from the coast, but rainfall is normally adequate for the growth of most crops. Snowfall is of little economic importance. A measurable snowfall is reported in this county only one out of six winters.

At times, tornadoes, severe thundersqualls, damaging hailstorms, and tropical storms and hurricanes are hazards. A tornado can be expected once in about 20 years, and a severe thundersquall, once in about 10 years. About 6 tropical storms or hurricanes per 100 years move across the county, or close enough to cause some damage to crops or other property.

Public Facilities

This county shares in the two-county, Copiah-Lincoln Junior College. In addition, there are 11 high schools, including several vocational schools and 1 junior high school, 10 elementary schools, and 1 parochial school. Buses owned by the county are used to transport pupils to the elementary schools.

Churches of various denominations are located throughout the county. There is a hospital in Brookhaven. A fairly large public library is also located in Brookhaven, and a mobile unit carries books to outlying areas. A biweekly and a weekly newspaper are published in the county.

One park and two public swimming pools are located in Brookhaven. During the summer, the playgrounds are maintained by the public school system.

Industries

This county is basically agricultural. A number of industries are located in the county, however, including a creamery, a plant where lawnmowers are manufactured, a wire sheet plant, a garment factory, sawmills, a pulpwood station, a pole and piling plant, and a brick manufacturing plant. In addition, there are a few cotton gins in the county.

In 1943, an oilwell was brought in a few miles west of Brookhaven. There were 3 oilfields in the county in 1951 consisting of 249 producing wells. The daily output in that year consisted of 19,950 barrels of oil. Since 1951, another oilfield has been discovered, and 62 producing wells have been drilled. Many of the wells in the original three oilfields have gone dry since 1951.

Transportation

Federal Highways 51 and 84 pass through Lincoln County. Highway 51 runs from north to south, and Highway 84, from east to west. Two State highways that run from northwest to southeast also pass through the county. All Federal and State highways are concrete or hard surfaced. Most of the many local roads have a gravel surface, but about 200 miles of local roads have blacktop surfaces. Buses and trucks operate over Highways 51 and 84.

The Illinois Central Railroad runs from north to south through the central part of the county. The Mississippi Central Railroad also passes through the central part of the county, but it runs from east to west.

Agriculture

Little is known about the early agriculture in the area that is now Lincoln County. The Indians, however, were known to have cultivated small patches of corn, melons, pumpkins, and beans. Later, settlers came to the area and grew cotton as their principal cash crop.

Cotton continued to be the principal crop until about 1937, but since 1937 the system of farming has changed greatly. Farmers have grown more sod crops and close-growing crops, and there has been a corresponding decrease in the acreage of cotton.

Dairying has been important in the county for a number of years, but it did not expand rapidly until the early 1940's. In the early 1940's there were only 12 to 14 grade A dairy barns in the county. Since that time, the number of grade A dairy barns has increased greatly, and there has been a marked increase in the number of dairies that sell for whole milk distribution and for manufacturing purposes.

In the following pages facts about the agriculture of the county are discussed. The statistics used are from reports published by the U.S. Bureau of the Census.

Size and number of farms

Since 1950, there has been a slight decline in the number of farms in Lincoln County. In 1954, there were 2,717 farms, as compared to 2,950 in 1950.

The farms have increased slightly in size. In 1954, the average-sized farm was 98.6 acres, as compared to 94.2 acres in 1950. In 1954, 1,067 farms were less than 50 acres in size. Of the remaining farms in the county, 710 were 50 to 99 acres in size, and the rest were more than 100 acres in size.

Crops

Table 10 gives the acreage of the principal crops grown in the county in stated years. The total acreage of cropland harvested decreased from 83,455 acres in 1939 to 36,779 acres in 1954. During the same period, there was a marked increase in yields. The improved yields were probably the result of better land use, the development of better varieties of crops, the increased use of fertilizer, more effective control of insects, and the use of other improved management practices.

The acreage in close-growing crops and hay has increased in the county during recent years. Oats has probably increased more in acreage than other close-growing crops. The acreage in oats, threshed or combined, increased from 588 acres in 1944 to 1,516 acres in 1954. During the same period, the acreage of hay crops, excluding soybean, cowpea, peanut, and sorghum hay, increased from approximately 5,376 acres to 9,505 acres.

TABLE 10.—*Acreage of principal crops*

Crop	1944	1949	1954
	Acres	*Acres*	*Acres*
Cotton harvested	17, 042	11, 219	7, 100
Corn harvested for grain	31, 991	22, 301	17, 724
Oats threshed or combined	588	989	1, 516
Hay crops other than soybean, cowpea, peanut, and sorghum hay	5, 376	5, 934	9, 505
Sweetpotatoes harvested for home use or for sale	782	[1] 384	[2] 235

[1] Does not include acreage for farms with less than 15 bushels harvested.

[2] Does not include acreage for farms with less than 20 bushels harvested.

Livestock

A large part of the farm income in Lincoln County is derived from the sale of livestock and livestock products. Beef cattle have increased in number in recent years and have improved in quality. The county had a total of 39,444 head in 1954.

The number of dairy cattle in the county has also increased. In 1940, the county had a total of 10,489 head of cattle, kept mainly for milk production, as compared to 19,322 in 1954. Many of the dairy cattle are on farms where grade A dairy barns are located.

A total of 2,901 horses and mules was reported in the county in 1954. These animals are used mainly to cultivate small tracts. Tractors have largely replaced horses and mules as a source of power.

Hogs have decreased in number in this county. In 1940, there were 9,729 hogs and pigs of all ages in the county, but the number had decreased to 5,951 in 1954. Many of the hogs are raised for home use, but some are sold for use in brood herds or for slaughter.

Sheep are not raised extensively. In 1954, there were only 140 sheep in the county.

Pastures

In 1954, a total of 82,555 acres was in pasture in Lincoln County, not including woodland used for pasture. Much of the pasture that has been established in recent years has been permanent pasture. The permanent pastures are in many parts of the county, but much of the acreage is within the Providence-Bude soil association. Some of these areas, though considered to be permanent pasture, will be used for pasture for a few years and then returned to row crops as part of a crop rotation.

In 1941, experiments were begun to improve the pastures in Lincoln County. In that year a pasture plot 3 acres in size was limed, fertilized, prepared for planting, and seeded to whiteclover and dallisgrass. Similar plots, seeded to different varieties of grass and clover, were established in other parts of the county. Many farmers became interested in these plots and began to improve their own pastures. As a result, the acreage in improved pastures increased to 10,306 acres in 1954.

The principal plants used for pasture in this county are common bermudagrass, bahiagrass, dallisgrass, and tall fescue. Crimson clover, white clover, wild winter peas, vetch, lespedeza, and other suitable legumes are grown in combination with grass.

During the past few years, pastures in this county have received better management. Farmers have planted suitable perennial summer grasses with winter legumes to provide forage in summer and to supplement the forage available for grazing late in winter and early in spring. Winter perennial grasses are used as a basis for winter forage, along with hay and silage. When needed, small grain, ryegrass, sudangrass, and millet are used as special-purpose grazing crops.

More attention has been given in recent years to proper stocking rates, and to better balance between the production of summer forage crops and cool-season forage crops. In addition, attention has been given to providing adequate fertilizer and to controlling weeds in the pastures.

Tenure

In 1954, a total of 1,911 full owners and 278 part owners operated farms in this county. In addition, 526 tenants operated farms that they did not own. Two farms were operated by farm managers.

Glossary

Aggregate (of soil). Many fine soil particles held in a single mass or cluster, such as a clod, crumb, block, or prism.

Alluvium. Sand, silt, clay, or other sediments deposited by streams.

Available moisture capacity. The amount of moisture a soil can hold that is available to roots of plants. This is approximately the amount of moisture held between one-third atmosphere and 15 atmospheres of tension.

Clay. As a soil separate, the mineral particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Claypan. A compact, slowly permeable soil horizon rich in clay and separated more or less abruptly from the overlying soil.

Colluvium. Mixed deposits of soil material and rock fragments near the base of rather steep slopes. The deposits have accumulated through soil creep, slides, and local wash.

Complex, soil. An intricate mixture of areas of different kinds of soil that are too small to map separately on a publishable soil map and are, therefore, mapped together as a single unit.

Consistence, soil. The properties of soil material that determine its resistance to crushing and its ability to be molded or changed in shape. The following terms are used to describe consistence:

Firm. When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Friable. When moist, crushes easily under gentle to moderate pressure between thumb and forefinger, and coheres when pressed together.

Plastic. When wet, forms a wire or spindle when rolled between thumb and forefinger; readily deformed by moderate pressure, but can be pressed into a lump.

Sticky. When wet, adheres to other material.

Other terms frequently used to describe consistence are *brittle, compact, stiff,* and *tight.*

Contour furrow. A furrow plowed at right angles to the direction of slope, at the same level throughout, and at regular intervals.

Diversion ditch. A broad-bottomed ditch that serves to divert runoff so that water will flow around the slope to an outlet without causing erosion.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Fragipan. A dense, brittle layer in the subsoil that is soft when wet and hard and brittle when dry.

Gleyed soil. A soil that contains a horizon in which waterlogging and, consequently, lack of oxygen have caused the soil material to be of a neutral gray color.

Granular structure. Soil structure in which the individual grains are grouped into spherical aggregates with indistinct sides. Highly porous granules are commonly called crumbs. A well-granulated soil has the best structure for most ordinary crop plants. See also Structure, soil.

Horizon, soil. A layer of soil, approximately parallel to the surface of the soil, that has distinct characteristics produced by soil-forming processes (*6*).

A horizon. The master horizon consisting of (1) one or more mineral horizons that have the maximum accumulation of organic matter; (2) surface or subsurface horizons that are lighter in color than the underlying horizons and have lost clay minerals, iron, and aluminum with resultant concentration of the more resistant minerals; or (3) horizons that belong to both of these categories.

B horizon. The master horizon of altered material characterized by (1) an accumulation of clay, iron, or aluminum, and accessory organic material; or (2) more or less blocky or prismatic structure together with other characteristics, such as stronger colors, unlike those of the A horizon or the underlying horizons of nearly unchanged material; or (3) characteristics of both of these categories.

C horizon. A layer of unconsolidated material, relatively little affected by the influence of organisms and presumed to be similar in chemical, physical, and mineralogical composition to the material from which at least a part of the overlying B and C horizons have developed.

D horizon. Any stratum underlying the C horizon, or the B horizon if no C is present, that is unlike the material from which the solum developed.

Infiltration. The downward entry of water into the soil or other material.

Leaching, soil. The removal of materials in solution by the passage of water through the soil.

Loess. Geologic deposit of relatively uniform, fine material, mostly silt, that presumably was transported by wind.

Morphology, soil. The constitution of the soil, including the texture, structure, consistence, color, and other physical, chemical, and biologic properties of the various horizons that make up the soil profile.

Mottling, soil. Patches of contrasting color that vary in number and size. Descriptive terms for mottling are: Contrast—*faint, distinct,* and *prominent;* abundance—*few, common,* and *many;* and size—*fine, medium,* and *coarse.* The size measurements are as follows: *Fine,* commonly less than 5 millimeters (about 0.2 inch) across the greatest dimension; *medium,* commonly from 5 to 15 millimeters (about 0.2 to 0.6 inch) across the greatest dimension; and *coarse,* commonly more than 15 millimeters (about 0.6 inch) across the greatest dimension.

Natural drainage. Conditions of drainage that existed during the development of the soil. The following terms are used to express natural drainage:

Excessively drained. Water is removed from the soil very rapidly.

Somewhat excessively drained. Water is removed from the soil rapidly.

Well drained. Water is removed readily, but not rapidly. A well-drained soil has good drainage.

Moderately well drained. Water is removed from the soil somewhat slowly so that the profile is wet for a small, but significant, part of the time.

Imperfectly or somewhat poorly drained. Water is removed from the soil slowly enough to keep it wet for significant periods, but not all of the time.

Poorly drained. Water is removed so slowly that the soil remains wet much of the time. The water table is commonly at or near the surface during a large part of the year.

Very poorly drained. Water is removed from the soil so slowly that the water table remains at or on the surface the greater part of the time. Soils of this class are frequently ponded.

Parent material. The unconsolidated mass of rock material (or peat) from which the soil profile develops. See also Horizon, soil; Profile, soil; Substratum.

Permanent pasture. Pasture that occupies the soil for a long time, in contrast to rotation pasture, which occupies the soil for only 1 or 2 years in a rotation cycle with other crops.

Permeability, soil. The quality of a soil that enables water or air to move through it.

Phase, soil. The subdivision of a soil type or other classificational soil unit having variations in characteristics not significant to the classification of the soil in its natural landscape, but significant to the use and management of the soil. Examples of the variations recognized by phases of soil types include differences in slope, stoniness, and thickness because of accelerated erosion.

Podzolization. The process by which soils are depleted of bases, become more acid, and develop a leached surface layer from which clay has been removed.

Productivity, soil. The capability of a soil to produce a specified plant or sequence of plants under a given system of management.

Profile, soil. A vertical section of the soil through all its horizons and extending into the parent material. See also Horizon, soil; Parent material.

Reaction. The degree of acidity or alkalinity of the soil, expressed in words or in pH values, as follows:

	pH		*pH*
Extremely acid	Below 4.5	Mildly alkaline	7.4–7.8
Very strongly acid	4.5–5.0	Moderately alkaline	7.9–8.4
Strongly acid	5.1–5.5	Strongly alkaline	8.5–9.0
Medium acid	5.6–6.0	Very strongly alkaline	9.1 and higher
Slightly acid	6.1–6.5		
Neutral	6.6–7.3		

Relief. The elevations or inequalities of a land surface, considered collectively.

Sand. Individual rock or mineral fragments that have diameters ranging from 0.05 millimeter (0.002 inch) to 2.0 millimeters (0.079 inch). The term "sand" is also applied to soils that contain 85 percent or more of sand and not more than 10 percent of clay.

Series, soil. A group of soils that have profiles almost alike. Except for the texture of the surface layer, all the soils of one series have major horizons that are similar in thickness, arrangement, and other important characteristics. A series may consist of two or more soil types that differ from one another in the texture of the surface layer.

Silt. Individual mineral particles of soil that range from 0.002 millimeter (0.000079 inch) to 0.05 millimeter (0.002 inch) in diameter. The term silt is also applied to soils that contain 80 percent or more of silt and less than 12 percent of clay.

Solum. The upper part of a soil profile, above the parent material, in which the processes of soil formation are active. The solum in mature soils consists of the A and B horizons.

Structure, soil. The arrangement of primary soil particles into compound particles or clusters that are separated from adjoining aggregates and have properties unlike those of an equal mass of unaggregated primary soil particles. The principal forms of soil structure are *platy, prismatic, columnar* (prisms with rounded tops), *blocky* (*angular* or *subangular*), and *granular.* Structureless soils are (1) *single grain*—each grain by itself, as in dune sand, or (2) *massive*—the particles adhering together without any regular cleavage, as in many claypans and hardpans.

Subsoil. Technically, the B horizon; roughly, that part of the profile below plow depth in which roots normally grow.

Substratum. Any layer beneath the solum, or true soil. The term is applied to both parent material and to other layers unlike the parent material, below the B horizon or the subsoil.

Surface runoff. Water removed by flow over the surface of the soil. The amount and rapidity of runoff are affected by the texture, structure, and porosity of the surface soil; the plant cover; the prevailing climate; and the slope. Terms used to express relative degrees of runoff are *very rapid, rapid, medium, slow, very slow,* and *ponded.*

Surface soil. That part of the soil ordinarily moved in tillage, or its equivalent in uncultivated soil, about 5 to 8 inches in thickness.

Texture, soil. The relative proportions of the various size groups of individual soil grains in a mass of soil. Specifically, the proportions of sand, silt, and clay.

Tilth, soil. The physical condition of a soil in respect to its fitness for the growth of a specified plant or sequence of plants.

Topsoil. Presumably fertile soil or soil material, rich in organic matter, that is used to topdress roadbanks, parks, gardens, and lawns.

Type, soil. A subgroup, or category, under the soil series that is based on the texture of the surface soil.

Undifferentiated soil group. Two or more related soils that are mapped as a single unit because, in practical use, their differences are too small to justify separate recognition.

Upland (geologic). Land consisting of material unworked by water in recent geologic time and lying, in general, at a higher elevation than the alluvial plain or stream terrace.

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